University of Alberta

HIV/AIDS and Condom Use in Alberta

by

Veronica C.J. Alexander

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Arts

Department of Sociology

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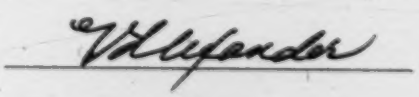

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Abstract

In an effort to discover what factors may be involved in adult Albertans' choices to protect themselves from HIV, this thesis examines data on HIV/AIDS from two years of the *All Alberta Survey*, 1990 and 1992. The frequency and rates of condom use were examined in light of each individual's objective risk of contracting the AIDS virus (defined by the existence of a new sexual partner within the past two years and the number of such new partners). Self-reported risk (from "none" to "high" risk) was examined for its relationship with objective risk and with condom use. In the hopes of pinpointing several at-risk population characteristics, both age and gender were analyzed according to condom use and objective and subjective risk factors, showing males and younger people to be at greater risk. Although there was an improvement in condom use over two years, there was little improvement in the higher risk group which most needed the improvement.

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Faculty of Graduate Studies and Research

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled *HIV/AIDS and Condom Use in Alberta* submitted by *Veronica C.J. Alexander* in partial fulfillment of the requirements for the degree of *Master of Arts*.

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Dedication

This thesis is dedicated to my family who has supported me throughout in surmounting every obstacle in this process. Thanks John and David for your technical computer knowhow and hours spent finding solutions. Thanks Stephanie and Gerti for your psychological and moral encouragement to persist. Finally, I also dedicate this thesis to the memory of Hans Kummermehr, as well as of three loyal friends, Sheila, Wierdly and Kenzo, all of whom were present and supportive during this time.

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1 Introduction

Over the past two decades, the health issue of AIDS (Acquired Immune Deficiency Syndrome) has become a topic of study for professionals and academics in a wide range of fields, including social scientific research. The extreme seriousness of the rapid spread of the human immunodeficiency virus (HIV) which leads to the terminal illness AIDS, has led to a focus on identifying dangerous or risky behaviours and high-risk subgroups, exploring prevention methods, and finally, educating the public. Across Canada and most of the world, sexual intercourse is considered the most widespread manner of HIV transmission. Specifically, anal and vaginal intercourse are the most common means of transmission for the general population in Canada (Maticka-Tyndale, Sept., 1991). Thus, for the general population the use of a condom during sexual intercourse has been advocated by health officials and governments as the best tool for prevention of HIV transmission in this manner, aside from abstinence (Reiss et al., 1989).

The purpose of the present research is to explore the ways in which adult Albertans have reacted and attempted to cope with this very significant and relatively new health problem. Essentially, through my analysis, I sought to discover whether adult Albertans were responding to this crisis by promoting their own positive and healthy behaviour choices and in what manner this was being done. Thus, in the hopes of

enlightening health promoters and educators as to the approaches which must be taken, this study aims to evaluate the level of health-affirming attitudes and behaviours among this adult population in the wake of the AIDS epidemic of the late 1980s and the ensuing HIV-preventative programming set up in the early 1990s in Alberta and Canada.

Context for this research

In 1990, more than 3,800 Canadians had been diagnosed with AIDS (Maticka-Tyndale, Feb. 1991)[1]. Around this time period of growing AIDS awareness and education efforts within Canada and its individual provinces, current information on adult Albertans' knowledge and behaviours was needed and requested. Thus, based on objectives set in a 1987 document on the "(p)revention, (m)anagement and (c)ontrol of AIDS" (*Education and Caring*, 1987), the Alberta AIDS Program sought to assess the success of prevention and control programs within Alberta. This involved the implementation of a three-year strategy for reducing risk and preventing AIDS in Alberta, the foundation of which was a belief in focussing on public education.

The strategy was twofold: to control the spreading of HIV, and to develop proper care for those with HIV and AIDS. At the time this document was prepared, there were 88 known cases of AIDS in Alberta. By the following year that number had climbed to

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[1] The Federal Centre for AIDS lists the number of Canadian diagnosed AIDS cases as 3,272 in early 1990, cited in *A Strategic Approach to AIDS-Related Problems* (1990).

131 (*Education and Caring*, 1987). In keeping with strategies of the World Health Organization, Alberta's Provincial AIDS Program planned a large media campaign, sexuality curriculum development in schools, provision of increased resources and education for health professionals, and the implementation of a toll-free Alberta AIDS information line.

In 1987, this document was followed by the administration of *The Alberta AIDS Survey* in two parts, one to an adult sample, the second to a teen sample. Respondents were asked how informed they felt on HIV and AIDS, questioned about their fear levels about AIDS and their reported sexual behaviour changes in light of the AIDS epidemic, and tested on their knowledge of HIV transmission routes. The results showed the existence of a high level of concern about the risk of contracting AIDS (for example, a majority of adult respondents felt that having 2 or 3 sexual partners over the previous five years put one at high risk for contracting the HIV); a notable degree of misinformation on specific transmission modes (for examples, high levels of fear of donating blood or caring for an AIDS patient, while a significant number, 14%, did not know that bodily fluids must be exchanged), although basic knowledge was high for the common routes; and the expression that a majority of respondents did not feel well-informed on the subject of HIV/AIDS (only 11% felt very well informed).

In an effort to inform the public, by educating and informing professionals working in fields related to and in contact with sources of health issues, Alberta Health

outlined a *A Strategic Approach to AIDS-Related Problems* (1990). The plan was to provide members of the helping professions with advanced workshops and further support on HIV and AIDS at the community level, over two years. Major professional AIDS information sources for this initiative at the time included the STD Control Education Unit, the AIDS Network of Edmonton, AIDS Calgary, and the Provincial AIDS Program.

Thus, this strategy for professionals, along with the earlier three-year strategy, with its various interlinked media, health care, educational, and community service programs in their initial planning stages, formed the background for the administration of the 1990 and 1992 *All Alberta Surveys* and their questions on AIDS. The first of what was to become a series of surveys involving HIV/AIDS-related questions, the 1990 *All Alberta Study of the AIDS-Related Knowledge, Attitudes, and Behaviours of Albertans* was conducted as a means to address the impact and effectiveness of the above strategy objectives, and to obtain specific information relevant to future planning of AIDS policies, programs, and services in this province.

A special set of questions on AIDS-related knowledge, attitudes, and behaviours was developed by the Provincial AIDS Program, Alberta Health, for inclusion in the 1990 *All Alberta Survey* (*A.A.S.*) conducted by the Population Research Laboratory (PRL) of

the University of Alberta.[2] The AIDS questionnaire items were designed to estimate the extent of self-assessed risk among respondents for acquisition of HIV, to provide input to further AIDS educational campaigns, and to inform public policy of the behaviours, attitudes, and opinions of a representative cross-section of adult Albertans on key issues surrounding AIDS-related policies, programs, and services for the general population and for persons with AIDS. In the 1992 *A.A.S.*, many of the same questions on AIDS, with some variations, were again asked of a random, representative sample of the Alberta population,[3] in order to assess any changes in perceptions and behaviours and the effects of educational programs during the two years.

Alberta Health continued to sponsor such questions in the *A.A.S.* in 1993[4], 1994[5], 1995[6], 1996[7], and 1998[8], including a combination of both similar and different thematic

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[2] AIDS-questions excerpts, used with the permission of the Population Research Laboratory, University of Alberta, are reproduced in Appendix 1.

[3] AIDS-questions excerpts, used with the permission of the Population Research Laboratory, University of Alberta, are reproduced in Appendix 2.

[4] H.C. Northcott, *HIV/AIDS Issues in Alberta: The 1993 Survey of Adults (Final Report)*. Edmonton: Alberta AIDS Program, Alberta Health, 1993. See also H.C. Northcott, *HIV Issues in Alberta*, 1994.

[5] H.C. Northcott, *HIV/AIDS Issues in Alberta: The 1994 Survey of Adults (Final Report)*. Edmonton: Alberta AIDS Program, Alberta Health, 1995.

[6] H.C. Northcott, *HIV/AIDS Issues in Alberta: The 1995 Survey of Adults (Final Report)*. Edmonton: Alberta AIDS Program, Alberta Health, 1996.

[7] H.C. Northcott, *HIV/AIDS Issues in Alberta: The 1996 Survey of Adults (Report)*. Edmonton: CDC, Health Strategies and Research, Alberta Health, 1996.

questions on HIV/AIDS as follow-up information after the initial two surveys analyzed here. Some interesting developments and patterns recur throughout the years. For example, 9% of Albertans in 1990 personally knew someone with HIV/AIDS, while fully 20% do in 1998, showing the increase one would expect. However, a continuing question asking respondents for their perceived chances of getting the HIV, showed, somewhat counter-intuitively, that about half of all Albertans consistently do not believe that they have any chance of getting the virus causing AIDS, with only minor fluctuations between 1990 results (52%) and 1996 results (50%).

A third increasingly important question area addressed in more recent *All Alberta Surveys* is the percent of Albertans tested for HIV at the time of the survey, with the numbers growing from 10% in 1990, to 14% in 1992, 20% in 1994, and then to 24% immediately by the year after, in 1995. Further, one of the provincial health objectives for STD and AIDS laid out in February of 1992 (*Goals for a Healthy Alberta*, 1992) was to have achieved a goal minimum of 50% among sexually active adults using condoms in non-monogamous relationships by 1995. The survey analysis allows us to ascertain whether such goals are realistic and whether they have been achieved. Given the relatively recent and epidemic nature of HIV and AIDS, the ability to compare across years on similar points of interest makes the continuation of this type of survey research

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[8] H.C. Northcott, *HIV/AIDS Issues in Alberta: The 1998 Survey of Adults (Report)*. Edmonton: Population Health Strategies Branch, Alberta Health, 1998.

extremely important for understanding which key areas to focus on, where policy and programs have succeeded, where they have not produced expected results, and what has been altogether neglected.

This research

The 1990 *All Alberta Study of the AIDS-Related Knowledge, Attitudes, and Behaviours of Albertans* was the first HIV/AIDS survey conducted by the Population Research Laboratory of the University of Alberta in this format, which was to be continued in a similar vein throughout following years of the *A.A.S.* The only previously conducted survey of Albertans on this topic had been *The Alberta AIDS Survey* of 1987 which served as the preliminary evaluation tool for developing basic HIV/AIDS-preventative strategies covering a three-year period. By 1990, the basic impact of this strategy could be assessed and evaluated through the *A.A.S.* questions that year.

At the same time, Alberta Health initiated the two-year strategy aimed specifically at community health educators and employees in the helping professions who most often came into contact with AIDS-related problems in their work. This huge educational effort, supported by many AIDS and STD-prevention organizations, was expected to significantly increase HIV knowledge and awareness in populations at risk by increasing the overall expertise of professionals in relevant fields. The *All Alberta Survey* 1992 responses would be expected to have demonstrated some of the effects of this educational strategy, both in terms of evidence of absolute knowledge and preventative behaviour,

and, moreover, in comparison to responses given in 1990, before the strategy was implemented. A difference between those years in attitude, knowledge and behaviours, hopefully in increasing and positive directions, could be reasonably expected.

The relative similarity of the two survey years allows for a clear comparative analysis between years, as well as within years. In this way, the initial impact, in both relevant years, of new information and perspectives on health promotion at the advent of the AIDS crisis in the late 1980s and early 1990s (when the amount of HIV-related information quickly escalated within a short time period) can be measured. This analysis also provides the basis for a comparison with later samples, after the implementation of other types of intervention attempts. Further, for the purposes of more specific within-cohort analysis, the two years may be combined for comparison with similar analyses of data a decade later, for example, to measure generational changes, or for intra- and international comparison with the Alberta population.

In both *A.A.S.* surveys, the questionnaire was administered to a representative sample of the adult (18 years and older) Alberta population through face-to-face and/or telephone interviews, with sample sizes of 1245 and 1277, respectively, in 1990 and 1992.

This study examines condom use among those adults in Alberta who are at risk through having a higher number of new sexual partners. The rate of condom use is

analyzed specifically in relation to individuals' subjective assessment of their risk level for acquiring HIV and also in relation to the objective risk level evidenced by their sexual activity with new partners in the previous two years. With the degree of information available from the *A.A.S.*, the Information-Motivation-Behavioural Skills Model of preventative behaviour[9] and the Theory of Reasoned Action may be used as a guide to evaluate the results of the analysis. This latter theory, similar to the Theory of Planned Behaviour, combines the elements of positive attitudes towards practicing preventative behaviours, perceptions of ability and control to do so, and the existing social norms dictating the performance of those behaviours (eg., condom use) as determinant of the preventative behaviour (Fisher, 1997).

Starting from the assumption that people behave and react in a rational way to benefit themselves in socially endorsed manners, it would seem reasonable that individuals perceiving themselves at a higher risk level for contracting HIV would likely take more precautions, i.e., exhibit a higher rate of condom use, if and when promoted by health officials and other societal sectors as the proper method for preventing the consequences of the risk. The objective risk for individuals having new and more numerous recent sexual partners could also bear on condom use in a similar way.

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[9] For a description of this model, see Fisher, 1997. For example, this model is implemented in a secondary analysis of data on AIDS and Canadian youth by Hawa, Munro, & Doherty-Poirier (1998).

In order for perceived risk to be relevant for the assessment of individuals' choice to take preventative measures, it should correspond with objective risk. For example, it does not necessarily decrease the transmisson of HIV in the population for someone at very low risk (and outside a general high-risk group such as needle-sharing intravenous drug users) to consistently use condoms only because she mistakenly believes herself to be at risk. Thus, people's perceived risk is examined to measure the extent of its correspondence with individuals' actual objective risk. This study seeks to examine whether these expected relationships (based on the Theory of Reasoned Action) are, indeed, the case and additionally explores the differences of this relationship for individuals when factors of gender, age and education level are considered. Further, these relationships in 1990 and 1992 will be compared with one another, in order to assess the existence, and magnitude, of any changes in risk factors, personal risk perception, and condom use.

There are several topics related to HIV/AIDS which were addressed by one or the other, but not both, surveys in 1990 and 1992. Some additional relevant questions were asked of the 1992 Alberta sample concerning individuals' testing for HIV antibodies and the extent to which this was accompanied by test results and further information communication by health care workers. As well, the two knowledge questions (See Appendix 2) which were asked of the 1992 sample differed in both type and difficulty from those asked of the 1990 sample (the latter being more "difficult" in its assessment of knowledge levels). Finally, several attitude questions were asked on the 1990 survey

about mandatory HIV testing for various subgroups in the population and about school attendance involving the presence of an HIV+ child. These were not asked on the 1992 survey. Since this paper focusses on the changes between the survey years on similar topics and does a comparative analysis based on these, those questions not asked of both samples will not be presented in this research.

By its very nature, the data analyzed is limited by the enumerated-answer selection method used in the survey questions. Some detail, nuance, and quality of response has been sacrificed in exchange for specificity and quantitative comparativity of data. Greater numbers of Albertans in a more representative sample were included in the analysis, allowing an overview of the province's adult population on a variety of HIV/AIDS issues. However, this analysis and the results of the study are, accordingly, of a more general nature and offer a lower explanatory quality in terms of their ability to account for adult Albertans' motivations and mental-behavioural processes when making HIV-related health choices.

2 Review of the Literature

Since its detection and identification in the early 1980s, the Human Immunodeficiency Virus has become an extensively researched and publicized social and medical focus. By its very nature as a disease of epidemic proportions with social, sexual, psychological and medical causes and implications, it has been acknowledged as a health issue of utmost importance in a wide variety of fields. In February of 1990, the World Health Organization estimated the total number of diagnosed AIDS cases to be 203,354 (*Strategic Approach*, 1990, p. 3).

In a two-year period, just prior to the first survey examined here, the number of Canadian reported AIDS cases rose from 2,000 to over 3,800. In the same period, the corresponding U.S. statistic showed an increase from 60,000 to over 120,000 (King, 1989; Maticka-Tyndale, Feb., 1991). In 1994, just two years after the surveys analyzed here, the number of reported Canadian HIV-infected individuals had risen to 32,664. The present Canadian HIV infection rate (estimated /100 000) is 54.21, and the U.S. rate is 265.41. According to Health Canada statistics (*Surveillance Report to December 1999*, 2000), among countries of Canada's approximate population size in Western Europe and excluding the United States, only Italy, France and Spain have a higher rate of reported infection.

Since the early 1990s, the yearly rate (number of HIV cases reported each year)

has steadily decreased in Canada from nearly 3,000 in 1995 to 2,231 in 1999, but this rate decrease has levelled off substantially. The total number of reported positive HIV test results (the estimation of known infected individuals) numbered 45,534 in Canada, by the end of 1999 (Health Canada, 2000). While in 1990 there were 270 known cases of AIDS in Alberta, the present numbers for Alberta since 1985 include 985 diagnosed AIDS cases, with 3,261 infected individuals, making it the province with the fourth-highest infection rate in Canada (Ontario, Quebec and British Columbia are higher). For this reason, the past and ongoing research in Alberta and in Canada, as in countries all over the world, into HIV and the syndrome, AIDS, which the immune deficiency leads to, is extensive.

The more narrow focus of this study is on individuals' levels of risk and the subsequent preventative behavioural choices they make in protecting themselves against infection with the virus causing AIDS. Specifically, when general populations in Canada are examined, the transmission risk is overidingly one of a sexual nature. The general adult population of Alberta in 1990 and 1992 is the focus of this paper, and hence, research on special subgroups of the population at particular risk of HIV infection, such as intravenous drug users, the homosexual and bisexual male population, and blood recipients of the late 1970s and the 1980s will not be considered in the review of the literature to date.[10]

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[10] For a fairly extensive overview of the HIV/AIDS epidemic,
Footnote continued next page...

Many of the research articles and books have studied specific populations with certain sociodemographic characteristics. While earlier studies focussed more on homosexual males and non-prescription intravenous drug users (IDU) as high-risk HIV populations, later studies have also looked at various ethnic and cultural minorities, specific high-risk age groups, and different gender aspects in exploring possible factors and effects of HIV. The latter groups may not have seemed as obviously at risk before the HIV entered in large numbers into the "unsuspecting" heterosexual population and those subcultures with less access to information and support; however, the past ten years have made evident the vulnerability of almost all segments of the population (including even infants, born of HIV+ mothers). Specifically, information has shown us that those who obliviously believe that they are immune to HIV infection are the ones often most at risk, as they take little or no precautions to prevent infection.

Specialized research focussing more recently on the more unsuspecting at-risk populations, such as heterosexual women, will also not be dealt with here in detail, although many of the analyses conducted in this study certainly apply to that population, as well. In this vein, Manthorne edited the study, *Canadian Women and AIDS Beyond the*

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specifically covering AIDS research, theory and program design development, and describing target populations at risk during the period prior to the conducting of the *All Alberta Surveys* of 1990 and 1992, see Valdiserri (ed.), *Preventing AIDS: The Design of Effective Programs*, New Brunswick: Rutgers University Press, 1989.

Statistics (1990), an important close-up, personal view of the problem of HIV and AIDS from the perspective of, and for, women in Canada just prior to the *A.A.S.* studies on AIDS. In fact, the percentage of AIDS cases among women, stated as a proportion of the total of cases in Canada in the 1990s, showed it to be 6.2% prior to 1990, staying fairly constant at 6.9% until 1995, and then climbing to 10.6% of the total Canadian population in 1996 (*HIV Testing and Confidentiality*, Health Canada, 1998). Women are considered to have the fastest-growing proportion of AIDS cases and individuals with the HIV infection (Health Canada, 2000). Misovich, Fisher & Fisher (1992) found that particularly young women exhibited lower actual and intended AIDS preventative behaviours in the mistaken belief that knowing one's partner makes safer sex unnecessary, which offers explanatory power to the findings that rates of infection are highest among the young and among women (Maticka-Tyndale, 1997).

Further, Aboriginals of Canada are a population at risk for many reasons, including inadequate health care access, poverty, structural exclusion, and discrimination. Maticka-Tyndale (1997) also identifies Canadian native peoples among those populations containing "pockets" of high infection. Health Canada noted the existence of the "disproportionate impact of HIV/AIDS on Aboriginal communities", explaining that "risk factors associated with HIV transmission are over-represented among Aboriginal people" (*HIV Testing and Confidentiality*, p. 24).

Many U.S. studies emphasize the factors in HIV rate growth in the African

American population, whose socio-economic, cultural, and ethnic status make them a high-risk minority, conceivably for reasons not unlike urban Canadian Aboriginal people, in terms of the risks inherent in a lifestyle of a generally low socio-economic quality. Although Canadian Aboriginal people's proportion of AIDS cases was 14.4% in 1999 and steadily increasing, they form a small percentage of the Canadian (and Albertan) population and as a high risk group deserve specialized attention, so they are not considered separately within this analysis (Health Canada, 2000).

Finally, although condom use is generally accepted as the best risk reduction method among sexually active, non-IDU individuals (besides sexual abstinence), many studies also discuss programs, theories and concepts for HIV risk reduction which are totally unrelated to condom use (such as needle exchanging or teaching abstinence and monogamy). An example of such a study is a survey which takes an explorative look at a non-prescription needle use project and IDU HIV prevention in Alberta (Alberta Health, 1997).[11] Because of its special characteristics, this high-risk group will also not be discussed here. Thus, detailed information on factors and foci in the above outlined general areas will not be included for review in this paper.

The literature reviewed is restricted to HIV/AIDS-related issues of risk and

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[11] For further research on specific IDU issues and other high-risk populations, see Oskamp and Thompson (eds.), *Understanding and Preventing HIV Behaviour: Safer Sex and Drug Use*, 1996.

protection, specifically with respect to frequency and consistency of condom use. As well, literature was generally chosen only from North America, preferably Canada, (although several others were also selected from Australia, France, and multinational comparative research) to offer information and concepts which would be relevant to an Alberta population. An effort was made to examine research studying the general adult population.

Due to the high incidence of risky sexual behaviour among younger people, including some adolescents, many articles focus at least partially on this age group. The theories put forth, models tested, and factors analyzed were important in these studies, regardless of the age of the sample (see below for the theories and models). In other studies, specifically because of the young sample age, the information gleaned was very helpful surrounding this highest age risk group (eg., Munro and Doherty-Poirier, 1992). A particular advantage of this age group consists in its unique experience, having been raised and educated in the era of increasing AIDS awareness. Valuable insights can be gained from such studies which attempt to foresee the development of this group as it becomes the new adult population.

To begin with, there have not been a lot of studies on HIV/AIDS, and more specifically focussing on condom use, published on the adult Alberta population. In fact, relatively little has been published in this area for any Canadian population. Several studies on adolescents and youth and HIV/AIDS (Munro & Doherty-Poirier, 1992 on

grade 9 (*Series Report:3*) and grade 11 (*Series Report:4*) students; King, 1989 on Canadian youth) were either conducted in Alberta or included an Alberta population sample. Some Canadian studies examined college students and "young" Canadians in their risky sexual behaviours as they relate to condom use, including, among those, studies by Hobart (1992) and Maticka-Tyndale (Feb., 1991). Gender issues were also addressed in relation to HIV risk reduction, as exemplified by Bowd and Loos (1995).

In a study of *AIDS in Canada: Knowledge, Behaviour, and Attitudes of Adults* (1989), Ornstein found, in his research, that Canadians in varying populations possessed generally high rates of knowledge (Ornstein, 1989). However, these, in and of themselves (especially among youth and college-age individuals) were not found to be associated with the intention to behave in a protective manner or with condom use (Raj, 1996; Shoop & Davidson, 1994; Romer & Hornik, 1992; Sheer & Cline, 1994; Silverman et al., 1992). Thus, it appears clear that knowledge is at most a related factor in the encouragement of consistent preventative behaviour with regard to HIV transmission.

A related finding by Alberta Health during its 1991 evaluation of an AIDS Resource Kit for elementary schools states that less than 20% of elementary schools in Alberta had HIV/AIDS education occurring at that time (Oct., 1991). So, it is important to bear in mind that, perhaps, the above findings on the effect of knowledge on prevention behaviour may also be affected by the factor, or absence, of *early* intervention with information and practical knowledge, before alternate behaviours develop (for example,

see suggestions by Shoop and Davidson, 1994).

As an overview of the stage at which HIV/AIDS knowledge and behaviours were by the end of the 1980s, before the implementation of most of the significant HIV-related health prevention initiatives, Ornstein's comprehensive Canadian study provides possibly the most complete descriptive analysis of adult Canadians to date, in the area concerning behaviours and condom use, and it sets the stage for the Alberta population just prior to the two surveys analyzed in the present study.

The more plentiful sources outside Canada were central in providing a foundation for comparison with the *A.A.S.* results and in developing a framework of concepts, issues, factors, and relationships in HIV/AIDS research necessary to understanding the importance and limitations of the Alberta population findings. For example, many studies refered to, or actually based their analysis on, different models and theories relevant to factors in HIV/AIDS understanding and prevention. Important ones for this study include Ajzen and Fishbein's Rational Actor Model, Rosenstock and Beck's categorization of the Health Belief Model, and Bandura's theories on self-efficacy (for example, see Wells, 1994), to name a few. Discussion of constructivist approaches to risk in HIV/AIDS transmission and the social environment is provided by Bajos (1997), while Romer and Hornik (1992) add an important element to the behaviour-change models above with the consideration of a Social Consensus Model of HIV prevention and education.

Further, the literature provided an accumulated list of what proved to be extremely diverse and influential interrelated social and sexual factors operating at various levels for different age and gender groups to predict or understand risk reduction procedures and behaviour change. The operation of fear as a motivator for behaviour change, the presence of HIV testing and counselling, and perceived self-efficacy may impact rates of condom use and other protective measures. Depersonalization and lack of internalization of the risk of HIV, as exemplified in the "other person syndrome", the stigmatization of AIDS as a "gay disease" or as existing mainly among the non-prescription IDU population, and prevalent beliefs that knowing one's sexual partner or even practicing serial monogamy is sufficient cause for not practicing safer sex are all factors which increase risk among the general population. Information on the importance and limitations of pure HIV/AIDS knowledge is touched on often in the literature, as is the issue of risky unprotected sex as only one of many risks within the generalized realm of risk-taking behaviours.

Due to the extreme seriousness of contracting the Human Immunodeficiency Virus and the dire and fatal consequences of developing AIDS, researchers have reasonably suspected that fear, as a factor, might prove to be a strong motivator for behaviour change and condom use. The place of fear among the many factors in HIV risk reduction is addressed, in terms of its risk association with an emotional, as opposed to a rational, basis for actual behaviour change. For example, fear of AIDS was assessed in an analysis of a multinational study by James Wells (1994), as was the association of fear

with condom use. The results indicated a significant curvilinear association between the two. Thus, both high *and* low levels of fear were associated with low condom use during vaginal intercourse, while medium fear levels were associated with altogether higher condom use[12].

Further, many other researchers have provided conflicting information, suggesting that fear-arousal is not generally effective for motivating preventative behaviour change (Silverman et al., 1992; Bandura, 1990). However, it is possible that fear alone, as measured by these studies, must more importantly be linked to a perception of personal vulnerability to HIV in order to be an effective motivator. "Perceived personal immunity", studied by Hansen et al. (1990), may act as a convoluting factor in analyzing fear influence. Thus, an individual with a high fear of AIDS but low perceived susceptibility to HIV is not likely to take extensive behaviour-changing measures or exhibit a high rate of condom use.[13]

Attitudes and stereotyped beliefs in general are also destructive to those who hold them, in addition to those whom they target. In 1989, Northcott and Reutter conducted a survey on public opinion in Edmonton on AIDS policy in Alberta, wherein they noted the significant effects of fear of HIV infection and of negative attitudes towards homosexuals

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[12] For anal intercourse, the association was strong and linear.

[13] Perceived susceptibility has, nonetheless, also been questioned as a reliable behaviour-predicting factor (See

Footnote continued next page...

on HIV screening and isolation policies, which have been shown to be be generally ineffective and even counter-productive. If an individual possesses such negative attitudes towards certain subgroups in society and does not consider himself to be a member of one of these groups, his rejection of the implicit or explicit association will result in a lack of identification with the possibility of his own vulnerability to HIV.

Hansen et al. (1990) specifically point to the fact that, "people tend to deny their own risk (p. 627)"[14], which means that, even if associated with condom use, perceived susceptibility is not a motivator which would reach those most at risk, namely, those denying their own real risk. In this research, their surprising finding on young adults surveyed in the U.S.A. demonstrates the operation of personal immunity beliefs. The respondents who were at high risk (who had multiple partners and did not use condoms regularly) considered themselves to have only a one in one million chance of getting AIDS (the same personal chance estimation as abstinent, non-risky respondents). Conversely, these same high-risk individuals considered other higher risk women to have a 1/150 chance, and men, a 1/900 chance, of getting AIDS. Clearly, the discrepancy is enormous.

Brown et al., 1991; Severn, 1990).

[14] This occurs, for example, in the function of "optimistic bias" (Sheer & Cline, 1994) wherein an individual views himself as being at a lesser risk than he actually is by comparing himself with only those more vulnerable, and at greater risk, than himself.

The degree to which the health dictum to "know your partner" allowed an increase of false security and the encouragement of "other person syndrome" was explored by Misovich, Fisher & Fisher (1996). They found that, among caucasian, heterosexual college students, having information on a partner's sexual history or simply "knowing" a partner was deemed a sufficient rationale for not practicing safer sex and condom use. HIV prevention was not practiced, because respondents believed that knowing their sexual partner (without knowledge of the partner's HIV status) made them safe. Half of the respondents thought that asking about the partner's sexual history provided them with enough information to choose whether to practice safer sex or not, and over half believed that serial monogamy was sufficient an assurance to allow for the practice of unprotected sex.

The 1991 evaluation of the second phase of the *Facing AIDS (1991) Multi-Media Campaign* (Provincial AIDS Program, 1992) demonstrated a high degree of the "other person syndrome" in Alberta. The information transmitted was either not absorbed, because it did not appear to be directed at the viewer/reader, or the risk situations presented did not lead the viewer/reader to believe that she was at risk. Effects of low information absorption on the one hand were aggravated by the proportion who simply felt that the messages, as received, would not convince them to change their perspective or behaviour. Forty-nine percent disagreed that they would change their behaviour based on the messages, while 47% disagreed that the messages made them even think about their own involvement in risky forms of behaviour (*Summary Report: Phase II Facing*

AIDS, 1992, p. 24). Finally, in another example, Hobart (1992) explains the dangerousness of his illogical findings on young Canadians in his conclusion that, "the members of sample subgroups who know the most AIDS victims and so are most aware of the spread of the disease and rate the seriousness of the AIDS threat most highly are the respondents who rate sex with briefly known partners as *least* risky and who are *least* inclined to use condoms in sexual encounters with briefly known partners (p. 429, emphasis in original)."

The area of HIV/AIDS testing and counselling as a force in its own right has been examined from many angles (eg., Silverman et al., 1992), with conflicting results which likely have more to do with the inconsistent quality of counselling across North America than the question of its potential impact on risk reducing behaviour and condom use. For example, in their study of voluntary HIV testees from the general population who also underwent HIV counselling, Landis et al. (1992) were not able to detect any significant overall changes in individuals' high-risk behaviours over a year's time.

In directing their focus on the counselling itself, Silverman et al. (1992) studied audio-tape recordings of three HIV counselling formats in order to assess the procedure and quality of the counselling sessions. They suggest that counselling should include patient participation for greater behavioural change by tailoring the information to patients' individual needs and circumstances. Interview and service encounter techniques in HIV counselling are skill-enhancing, since they allow for direct role-modelling and

assessment of the absorption of the information and skills and are, hence, preferable for motivating people towards effective behaviour change (Silverman et al., 1992).

A part of an approach identifying HIV-related risk among a category containing patterns of high risk behaviours, several studies examine risky behaviour in college students and adolescents in order to find possible associations with low condom use and unprotected risky sex (eg., Baldwin & Baldwin, 1988; Biglan et al., 1990; Severn, 1990; Sheer & Cline, 1994). For example, some findings report the predictive capacity of "age at first intercourse", "number of partners per year", "seatbelt use", and being female for estimating levels of cautious sexual behaviours (Baldwin & Baldwin, 1988; See also Maticka-Tyndale, 1997). Risky sexual behaviour has been found to correlate positively with sensation-seeking (Sheer & Cline, 1994) of which risk is an important element. Problem behaviours and antisocial behaviours, along with illegal drug, cigarette and alcohol use, were predictive of unprotected and risky sexual activity among adolescents in a study by Biglan et al. (1990). Among these behaviours, and specifically including illegal behaviours, the element of risk is always present.

Fisher & Fisher (1992) report that, abundant knowledge of HIV transmission and prevention notwithstanding, patterns of risky behaviour have not abated sufficiently to reduce perpetuation of the disease. They claim that behaviour change requires the systematic identification of the needs of each population being targetted, formulated according to realistic conceptualized behavioural science models. This is introduced as

"the information-motivation-behavioural skills model of HIV/AIDS risk reduction behaviour change" (p. 101). Without detailing the entire approach, it is clear that efforts to enact concrete risk-reduction change have led to the necessary acknowledgment of other population-specific factors to be considered, and accounted for in HIV prevention education, other than simple information and solution provision.

For example, another important factor influencing condom use and the reduction of risky sexual behaviour is an individual's social environment. Biglan et al. (1990) identified social context variables as relevant to high risk sexual activity. Several influencing factors include an individual's family structure, parenting style, and the existence of problem behaviours among friends. Fisher (1997) also explains that the basis of a social network theory approach considers the effect of normative behaviours on the success of HIV risk reduction programs and information dissemination. For example, among populations where risk is socially rewarded and is even the norm, prevention attempts will not succeed until change is achieved among role models and respected leaders in the social network itself, regardless of the apparent "logic" of the proposed health initiatives.

Perceived self-efficacy, elaborated on as a control mechanism over HIV transmission by Bandura (1990), is discussed as a key element by many in terms of its necessity for drawing together the positive factor influences on risk reduction and for resisting the negative peer and social norm pressures. Bandura actually identifies "self-

inefficacious thinking" as the key intermediate factor whose absence creates the gap between knowledge and the proper accompanying action. When an individual has low self-efficacy, the surrounding social environmental and emotional factors gain in influence on her actions. This is a crucial element in the consideration of motivations and concerns for teens, prostitutes, drug-dependent individuals, and other socially peripheral and high-risk segments of society.

For instance, Maticka-Tyndale points out that street youth have one of the highest rates of HIV infection among the Canadian population (1997). The accelerating rate of infection in these types of populations allows HIV to spread to the "lower-risk" populations, such as heterosexual individuals and unsuspecting members of apparently monogamous sexual or marital partnerships, through casual sex and/or recreational intravenous drug use. The relevance, in the long run, of uniquely-empowering HIV prevention initiatives among high-risk groups to the wider population of adults is thus obvious.

This perspective may help explain the often irrational and logically puzzling results of many studies on HIV risk and condom use. Perceived efficacy to handle the challenge of taking precautions is a vital part of HIV prevention. Particularly among the younger segment of the general population, whose risk-taking patterns and peer pressure experiences are usually at their highest levels, the confidence in one's ability to resist the peer norms and effectively control one's own risk-taking behaviour is likely one of the

most important factors in its condom use rates. Therefore, without considering perceived self-efficacy, any number of the huge educational and motivational efforts by media and health sources will suffer from severely reduced effectiveness levels, endangering the public at large.

Finally, studies generally demonstrate the application of certain programs for HIV health promotion and prevention education campaigns to actual populations with results indicating a need for greater skills and social self-management practice, rather than simply pure knowledge. As an encouraging example, motivation measures and behavioural skills were found to be significant in explaining and predicting condom use and individuals' number of sexual partners among a sample of first year university students (Hawa, Munro & Doherty-Poirier, 1998). In a similar vein, when instructed with the intended protective behaviour in mind, while accounting for the ability for internalization of the means and goals, regular classroom (co)education among younger students also exhibited positive results (Munro et al., 1994). Shoop and Davidson (1994) note that the habits begun at an early age, such as the ability to communicate about healthy behaviours and precautions, permit the development of healthy and responsible sexual habits into adulthood, as a normal part of one's lifestyle.

The sum total of the literature reviewed paints a background of information which is similar enough to the Alberta population to allow for comparison and certain expectations, yet varied enough to indicate differences from the *A.A.S.*, particularly in

terms of any missing and potentially relevant factors in HIV-related condom use and as a guide for further research in this area to benefit Albertans.

3 METHODS

3.1 Sampling

The Population Research Laboratory's *All Alberta Survey* of 1990 and 1992 included the sampling areas of Edmonton, Calgary and "Other Alberta". Interviews were conducted by telephone, with the exception of the Edmonton area in 1990, conducted face-to-face. The population considered for interviewing was all individuals eighteen years of age or older, living in a residential unit and contactable by telephone through simple random sampling of the phone numbers. An effort was made to include as nearly as possible 50% male and 50% female respondents in each survey through the use of a quota sample emphasizing males in the selection of interviewees. Both surveys contain weighted population samples to achieve proportionate representation of the total population of Alberta, according to the 1991 census. This resulted in sections of 25% Edmonton, 28% Calgary, and 47% non-metropolitan Alberta.

As Table 1 (below) demonstrates, the 1990 sample was composed of 49.5% women and 50.5% men, while in 1992 50.9% of respondents were female and 49.1% were male. The "young" population, those under the age of thirty, made up 24.8% and 25.6% of the population sample in 1990 and 1992, respectively. Twenty-three and three-fifths percent of the 1990 sample and 24.1% of the 1992 sample had less than a completed high school education.

TABLE 1 **Sample Characteristics of P.R.L. "*All Alberta Survey*": 1990 (N=1245) and 1992 (N=1277)**

		1990		1992	
VARIABLE		Frequency	Percent	Frequency	Percent
1. Gender	Male	628	50.5	626	49.1
	Female	617	49.5	651	50.9
		1245	100.0	1277	100.0
2. Age yrs	18 - 29	309	24.8	327	25.6
	30 - 39	370	29.7	373	29.2
	40 - 54	301	24.2	313	24.5
	55+	265	21.3	263	20.6
		1245	100.0	1276	99.9
3. Education	< H.S.	293	23.6	307	24.1
	H.S.	283	22.8	272	21.3
	Non - Univ	340	27.3	387	30.3
	Univ	326	26.2	309	24.2
	Missing	4	.3	3	.2
		1246	100.2	1278	100.1

3.2 Measurement

The analysis includes seven variables, with frequency of condom use as the dependent variable, three variables as risk measurements, and three sociodemographic factors considered relevant to HIV, sexual behaviour, and condom use.

Respondents considered objectively at risk were asked to locate themselves within one of four categories (three categories only in the 1992 *All Alberta Survey*) of "frequency

of condom use", ranging from "always/all of the time" to "never/not at all". Subjective risk was measured on a four-point scale of high/medium/low/none "chances of getting the AIDS virus", and objective risk factors included asking whether the respondent had had a new sexual partner within the previous two years and, if so, how many new sexual partners.

The three sociodemographic variables analyzed were the binary variable gender; age in years; and highest educational level attained, which ranged on a fifteen-point scale from 1 = "no schooling" to 15 = "completed university doctorate degree". Age and education were recoded for part of the analysis as four-category variables to enable the assessment of factors for certain population segments (See Appendix 3).

The statistical procedure which was followed included three levels of analysis. Initially, in order to create a descriptive picture of the 1990 and 1992 population samples, the frequencies of each of the seven variables in both survey samples were obtained. Subsequently, recoded frequencies for age[15], education, and "number of new sexual partners" were also obtained. Next, a series of cross-tabulations were run for age and gender with the three 'risk' variables and with condom use to examine important differences in these sociodemographic variables. Based on an anticipation that the

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[15] Two different category divisions were attempted in recording age. The first was a five-category variable, which proved to contain unequal group sizes, lacking numbers in the older categories. The second one was the four-category

Footnote continued next page...

subjective and objective risk variables would be related in specific ways, the two objective risk variables were also cross-tabulated with the subjective risk variable of individuals' perceived "chances of getting the AIDS virus".

Then, to complete the exploration of factors involved in condom use, the two relevant "risk" variables were cross-tabulated with "frequency of condom use" using the recoded variables listed above for analysis in 1990 and 1992. This allowed for a more detailed examination of the relationship between each of the presumed "influencing" variables and the dependent variable, condom use.

Finally, an overview of the relationships among all sex relevant uncoded variables was provided by running a multiple regression of the variables in metric form for each year. The latter permitted an analysis of relationships between variables *within* each survey year, as well as a comparison of similar variables *across* the two-year span.

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variable, which was later chosen to be used in the analysis.

4 RESULTS

The frequencies of the risk variables and condom use, both within and between the 1990 and 1992 survey years, can describe an increase, decrease or stagnation of rates of both risky and preventative behaviours for HIV transmission in Alberta, thus indicating a possible change over that time. The sociodemographic variables of age and gender are both important factors affecting objective risk, subjective risk, and condom use, and their relationships show differences within variables and changes or lack thereof over the two-year period.

The relationship between objective and subjective risk and between each of these and condom use, if any, can be examined to see whether actual lifestyle risk levels are consistent with people's perceived levels of their own vulnerability to the HIV. Further, these relationships may show whether an increasingly risky lifestyle, or the individual's perception of being at a higher risk, actually results in an increased frequency of condom use. Differences within sample populations on this relationship, as well as changes over time of the similar population samples from 1990 to 1992, can be seen through the cross-tabulation analysis. The relationships between risk variables and condom use while controlling for age, gender and education factors form a final area of focus in the multiple regression analysis, simultaneously allowing for the general summarizing comparison across time of the strength of the relationships.

4.1 Sociodemographic Factors in Risk and Condom Use

4.1.1 Subjective Risk

The 1990 population sample of 1245 contained 52.4% who felt they had no chance at all of contracting the AIDS virus (Table 2, below). This number decreased somewhat (by almost 5%) to 47.6% of 1277 surveyed in 1992. Of course, these numbers were reversed for those remaining who perceived "any risk at all". Less than half the sample in 1990 (47.6%) perceived themselves at risk (whether low, medium or high risk), compared to 52.4% in 1992.

TABLE 2 Self-Reported AIDS Risk in 1990 and 1992

1990					
Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
High	1	22	1.8	1.8	1.8
Medium	2	62	5.0	5.1	6.9
Low	3	496	39.9	40.7	47.6
None	4	639	51.4	52.4	100.0
No Response	0	2	.2	Missing	
Don't Know	8	23	1.8	Missing	
	Total	1245	100.1		

1992					
Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
High	1	22	1.7	1.7	1.7
Medium	2	67	5.2	5.3	7.0
Low	3	573	44.9	45.4	52.4
None	4	601	47.1	47.6	100.0
No Response	0	3	.2	Missing	
Don't Know	8	11	.9	Missing	
	Total	1277	100.0	100.0	

This would seem to suggest the presence of a slightly higher awareness of the dangers, and/or an acknowledgment of risk factors, by the 1992 sample over the 1990 sample. This change in percentage is almost entirely attributable to the population of "no risk" respondents whose 5% decrease from 1990-1992 leads to a similar increase in the category of "low risk" over that time period.

Age

Of the 1990 sample, each age group is fairly equally represented in the category of those who claim to have no chance of acquiring the AIDS virus (Table 3). This pattern is altered somewhat in 1992, where the youngest age group of 18-29 year-olds comprises only 1/5 of the "no subjective risk" population (122 of 600). The difference is accounted for in the representative increases by both the 30-39 year-olds and those over 54 years of age in this risk category (27.8% and 27.5%, respectively, within the "no risk" category).

In looking at the age group characteristics, it is interesting to note that the proportions of respondents in the four age groups considering themselves to be at "low" or "no" risk are similar to one another, consistent across years, and fairly high (range in 1990 is 91.2%-96.0%; in 1992 it is 90.8%-94.2%). The only age group which showed an increase in those feeling themselves at very little risk of contracting HIV from 1990 to 1992 are the 40-54 year-olds, who were 3% less likely to feel high or medium risk (See Table 4a). The biggest difference for this group was the change from 3.4% considering themselves at "high" risk in 1990 to only 1.0% in 1992 (Tables 3 and 4). Conversely, the youngest respondents (18-29 years) doubled their own assessment of "high" risk, from 1.3% to 2.8%. This group also noticeably decreased its "no subjective risk" assessment by almost 9% between the two study years (46.6% in 1990; 37.7% in 1992).

TABLE 3 Age and Self-Reported AIDS Risk in 1990

AGE (yrs)		High	Medium	Low	None	TOTAL
18- 29	Count	4	17	143	143	307
	% within age	1.3	5.5	46.6	46.6	100.0
30 - 39	Count	5	23	164	173	365
	% within age	1.4	6.3	44.9	47.4	100.0
40 - 54	Count	10	16	118	153	297
	% within age	3.4	5.4	39.7	51.5	100.0
55 +	Count	3	7	71	170	251
	% within age	1.2	2.8	28.3	67.7	100.0
TOTAL	Count	22	63	496	639	1220
	% within age	1.8	5.2	40.7	52.4	100.1

TABLE 3a Age and Self-Reported AIDS Risk in 1990 (recoded)

AGE (yrs)		High/ Medium	Low	None	TOTAL
18- 29	Count	21	143	143	307
	% within age	6.8	46.6	46.6	100.0
30 - 39	Count	28	164	173	365
	% within age	7.7	44.9	47.4	100.0
40 - 54	Count	26	118	153	297
	% within age	8.8	39.7	51.5	100.0
55 +	Count	10	71	170	251
	% within age	4.0	28.3	67.7	100.0
TOTAL	Count	85	496	639	1220
	% within age	7.0	40.7	52.4	100.1

TABLE 4 Age and Self-Reported AIDS Risk in 1992

AGE (yrs)		High	Medium	Low	None	TOTAL
18- 29	Count	9	21	172	122	324
	% within age	2.8	6.5	53.1	37.7	100.1
30 - 39	Count	5	21	181	167	374
	% within age	1.3	5.6	48.4	44.7	100.0
40 - 54	Count	3	15	147	146	311
	% within age	1.0	4.8	47.3	46.9	100.0
55 +	Count	5	11	69	165	250
	% within age	2.0	4.4	27.6	66.0	100.0
TOTAL	Count	22	68	569	600	1259
	% within age	1.7	5.4	45.2	47.7	100.0

TABLE 4a Age and Self-Reported AIDS Risk in 1992 (recoded)

AGE (yrs)		High / Medium	Low	None	TOTAL
18- 29	Count	30	172	122	324
	% within age	9.3	53.1	37.7	100.1
30 – 39	Count	26	181	167	374
	% within age	6.9	48.4	44.7	100.0
40 – 54	Count	18	147	146	311
	% within age	5.8	47.3	46.9	100.0
55 +	Count	16	69	165	250
	% within age	6.4	27.6	66.0	100.0
TOTAL	Count	90	569	600	1259
	% within age	7.1	45.2	47.7	100.0

Gender

The consideration of gender in respondents' subjective risk assessments demonstrates some important differences. First of all, in 1990 the majority of respondents who see themselves as being at high or medium risk for contracting HIV are female. As shown in Table 5, in both higher risk categories they comprise nearly 60% of the category. In 1992 (Table 5a), there is a reversal in gender roles when the males form a nearly 60% majority in the "high" risk category alone, females making up the remaining 40%. This pattern becomes more clear upon examining the respondents' answers within each gender.

Over two years, both males and females decreased proportions in the "no risk" category (by approximately 5%), with accompanying changes in the other risk categories. However, while males showed an increase in the combined "high" and "medium" risk level (from 5.7% to 7.4%), females actually decreased their higher risk assessments ("high/medium" risk) from 8.2% to 6.5%. The increase of 6.6% at "low" risk shows the most significant change for female respondents. What shows a small though important pattern over time is the convergence between the proportions of males and females who consider themselves at reasonably high risk. With females making the more radical numerical downwards shift, the difference between the genders decreases from 2.5% in 1990 (where males are numerically higher) to 0.9% in 1992 (where females are numerically higher), which results in more realistic risk assessments by both, as males should be somewhat more aware of their real risk, while certain populations of females in general need not perceive themselves at such a high risk, based on their objective risk.

TABLE 5 Gender and Self-Reported AIDS Risk in 1990

SEX		High	Medium	Low	None	TOTAL
Male	Count	9	26	272	311	618
	% within sex	1.5	4.2	44.0	50.3	100.0
	% within chances	40.9	41.9	54.8	48.7	50.7
Female	Count	13	36	224	328	601
	% within sex	2.2	6.0	37.3	54.6	100.1
	% within chances	59.1	58.1	45.2	51.3	49.3
TOTAL	Count	22	62	496	639	1219
	% within sex	1.8	5.1	40.7	52.4	100.0
	% within chances	100.0	100.0	100.0	100.0	100.0

TABLE 5a Gender and Self-Reported AIDS Risk in 1992

SEX		High	Medium	Low	None	TOTAL
Male	Count	13	33	290	283	619
	% within sex	2.1	5.3	46.8	45.7	99.9
	% within chances	59.1	50.0	50.6	47.0	49.0
Female	Count	9	33	283	319	644
	% within sex	1.4	5.1	43.9	49.5	99.9
	% within chances	40.9	50.0	49.4	53.0	51.0
TOTAL	Count	22	66	573	602	1263
	% within sex	1.7	5.2	45.4	47.7	100.0
	% within chances	100.0	100.0	100.0	100.0	100.0

4.1.2 Objective Risk

As differentiated from the respondents' subjective risk assessment (whose reliability is open for questioning), the more objective risk factors also inform on the shifts in population samples between the two years. Objective risk was measured according to the existence of any new sexual partners in the previous two years.[16] Respondents who had had at least one such partner were considered at objective risk.

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[16] The number of sexual partners is accepted as the major indicator of potential infection by an HIV-infected individual (Maticka-Tyndale, 1997) and thus, it was used as

Footnote continued next page...

Bearing in mind the fact that the numbers provided by the respondents with respect to "any" and/or "number of new sexual partners" are not necessarily completely accurate, as well as the fact that this reporting weakness is equally applicable to both survey years, it is possible to observe differences between the two years.

As Table 6 (below) shows, somewhat less than 1/5 of the population sample in both years (17.9% in 1990; 18.7% in 1992) had taken a new sexual partner in the previous two years, indicating fairly little change over time on this variable. This represents the proportion of the sample to whom questions on condom use were posed, as it is considered the group truly at risk in a general sense (not including characteristics indicating intravenous drug use, past blood transfusions, or participation in homosexual/bisexual male sex). For further detail on the extensiveness of objective risk, Tables 9 and 9a (below, under "Total" age groups, only) demonstrate that, of those individuals, a significantly larger proportion in 1992 had had *more than one* new sexual partner (74.7% or 175/234) than in 1990 (57.3% or 125/217). Individuals with either two or three new sexual partners in the past two years account for this increase, while those with four or more remained fairly constant (44/217 in 1990 and 47/234 in 1992). This overall, significant increase in the percentage of "higher risk" individuals (i.e., with greater numbers of sexual partners) among those objectively "at risk" is important to note with respect to later observations of condom use frequency among this group.

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an objective measure of risk in this analysis.

This noted increase of nearly 1/3 in the sample proportion with several new sexual partners in the second over the first analyzed survey year is interesting in light of the fact that at the aggregate level an expected accompanying subjective risk increase of that magnitude is not in evidence (see Tables 3a and 4a). This expectation is, of course, based on the assumption that the knowledge of personal risky sexual behaviours will lead to an awareness of higher personal risk. It is also possible that the number of new sexual partners is perceived as less of a risk factor than it, in fact, is, according to health officials. Alternatively, it may be perceived as less of a risk factor than other possible risk factors not considered in this analysis. The findings on condom use reported further below may go some ways in explaining this discrepancy between objective and subjective risk developments.

TABLE 6 New Sexual Partner in Past Two Years in 1990 and 1992

1990	OBJECTIVE RISK: NEW SEXUAL PARTNER IN LAST 2 YEARS				
Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1	222	17.8	17.9	17.9
No	2	1015	81.5	82.1	100.0
No Response	0	8	.7	Missing	
	Total	1245	100.0	100.0	

1992	OBJECTIVE RISK: NEW SEXUAL PARTNER IN LAST 2 YEARS				
Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	1	236	18.5	18.7	18.7
No	2	1028	80.5	81.3	100.0
No Response	0	13	1.0	Missing	
	Total	1277	100.0	100.0	

Age

The age group clearly at risk in the greatest numbers on the objective measure used here is the youngest group. While they represent about 1/4 of the sample population in the two surveys, respondents 18-29 years old account for over 1/2 of the total number of people in both surveys who had had a new sexual partner in the past two years (N=221 in 1990 and N=236 in 1992) (Table 7). The second most vulnerable group are the 30-39 year-olds who, together with the youngest group, represent fully 82.3% of those at objective risk for contracting HIV in 1990. In 1992 those respondents 18-39 years old were in a similar large majority at 82.2%. The proportion accounted for decreases as the age of the category increases, with those over 54 years old comprising only 3.6% and 3.8%, in the respective years, of those objectively at risk.

Among 18-29 year-old respondents, nearly 2/5 (38.1%) individuals had had a new sexual partner, with a 2.8% increase to 40.9% in 1992 (Table 7a). The next youngest group decreased in this area by 1.2% to 16.5% in 1992, still about 1/6 of the total sample of 30-39 year-olds. Ten percent of 40-54 year-olds in both years were at risk, with the

smallest number (less than 4%), as expected, among those 55 years and older.

It is interesting that among the population sample of 40-54 year-olds both objective and subjective risk proportions are consistent with one another and between years. Eighty-nine and 7/10% had no objective risk in 1990 (89.4% in 1992), and the percent which considered themselves to be at little or no risk (subjective risk) was only slightly higher at 92.3% in 1990 and 93.1% in 1992 (Table 4). It would be helpful to be able to ascertain the actual truth of this impression, by running a cross-tabulation of subjective risk and objective risk on this age group as a complete group, (minimal) between-year differences aside, since most age and gender groups demonstrate inconsistencies between these two risk types.

TABLE 7 Age and Sex with New Partner in Past Two Years in 1990

1990	Sex with New Partner in Last Two Years			
AGE (yrs)		YES	NO	TOTAL
18- 29	Count	117	190	307
	% within age	38.1	61.9	100.0
	% within sex	52.9	18.7	24.8
30 - 39	Count	65	302	367
	% within age	17.7	82.3	100.0
	% within sex	29.4	29.7	29.7
40 - 54	Count	31	269	300
	% within age	10.3	89.7	100.0
	% within sex	14.0	26.5	24.3
55 +	Count	8	255	263
	% within age	3.0	97.0	100.0
	% within sex	3.6	25.1	21.3
TOTAL	Count	221	1016	1237
	% within age	17.9	82.1	100.0
	% within sex	99.9	100.0	100.1

TABLE 7a Age and Sex with New Partner in Past Two Years in 1992

1992	Sex with at Least 1 New Partner in Last Two Years			
AGE (yrs)		YES	NO	TOTAL
18- 29	Count	133	192	325
	% within age	40.9	59.1	100.0
	% within sex	56.4	18.8	25.8
30 - 39	Count	61	309	370
	% within age	16.5	83.5	100.0
	% within sex	25.8	30.2	29.4
40 - 54	Count	33	277	310
	% within age	10.6	89.4	100.0
	% within sex	14.0	27.1	24.6
55 +	Count	9	246	255
	% within age	3.5	96.5	100.0
	% within sex	3.8	24.0	20.2
TOTAL	Count	236	1024	1260
	% within age	18.7	81.3	100.0
	% within sex	100.0	100.1	100.0

Gender

Objective risk from the point of view of gender differences shows a small male majority in the "objective risk" ("yes") category, constituting 58.4% of those at risk in 1990, with an increase to 62.7% in 1992 (Tables 8 and 8a). One fifth (20.7%) of all males in 1990 were at "objective risk", having had at least one new sexual partner in the past two years. In comparison, the female respondents were less at risk with 15.0% answering "yes". By 1992, the male population had increased its proportion at risk to 24.0% and, in

a divergent pattern, the females decreased in objective risk to 13.6%. Further, as opposed to subjective risk assessment (Tables 5 and 5a), where the gender pattern converges and the proportional values cross-over, here it diverges. However, the movement by each individual gender is in a similar direction for both types of risk. Males increased objectively and in their perception of risk while females decreased in both. Perhaps this is simply an example of the over/under-estimation discussed by others between the genders, with females beginning at a higher subjective risk estimation in 1990, but leading towards a more realistic lower estimation in 1992, while males, in opposite fashion, also become more realistic. Note that the actual directional tendencies between both risk types are fairly consistent.

TABLE 8 Gender and Sex with New Partner in Past Two Years in 1990

	Sex with New Partner in Last Two Years			
SEX		YES	NO	TOTAL
Male	Count	129	493	622
	% within male	20.7	79.3	100.0
	% new partner	58.4	48.6	50.3
Female	Count	92	522	614
	% within female	15.0	85.0	100.0
	% new partner	41.6	51.4	49.7
TOTAL	Count	221	1015	1236
	% within sex	17.9	82.1	100.0
	% new partner	100.0	100.0	100.0

TABLE 8a Gender and Sex with New Partner in Past Two Years in 1992

	Sex with at Least 1 New Partner in Last Two Years			
SEX		YES	NO	TOTAL
Male	Count	148	468	616
	% within male	24.0	76.0	100.0
	% new partner	62.7	45.5	48.7
Female	Count	88	561	649
	% within female	13.6	86.4	100.0
	% new partner	37.3	54.5	51.3
TOTAL	Count	236	1029	1265
	% within sex	18.7	81.3	100.0
	% new partner	100.0	100.0	100.0

4.1.3 Number of New Sexual Partners

Age

As the number of new sexual partners increases, the presumed objective risk increases. Based on this, results show that the respondent's age has a significant impact on his likelihood of having a greater or lesser risk of contracting the HIV. Those 55 years and over have, as expected, the least number of new sexual partners in both years, with a corresponding concentration in the lower numbers of new partners overall. The greatest number of new sexual partners in this age group is three in both 1990 and 1992, as compared to the ranges among the other groups in both years from a minimum of 6 new partners to a maximum of 60 new partners. The 18-29 year-old respondents have the highest numbers of new sexual partners, as well as the highest concentration in the upper

numbers of new partners.

One of the most noticeable differences in age is the proportion of people with at most two new sexual partners in relation to those with more than two. In 1990, the youngest group contained 38.1% who had had more than two new sexual partners in the past two years, while the 40-54 year-olds had only 21.9% such people (Table 9). It would normally be expected that the oldest group (55 years and older) have the lowest percentage here, whereas they actually have 37.5%. This distortion is due to the extremely low numbers of respondents in the "new partners" category. Three individuals have more than two new partners, among a total of merely eight individuals, which inflates the actual importance of the percentage. This fact, of itself, suggests the very low level of objective risk for this age group at all. As seen in Table 9a, the corresponding numbers in 1992 show an increase for all but the oldest group (11.1%). The 18-29 year-olds were slightly higher at 40.9% and the 30-39 year-old group made a leap from 32.8% in 1990 to 45.8% in 1992 having had more than two new sexual partners.

Looking at the the category of four-or-more new sexual partners, which excludes the oldest group, demonstrates again that the age groups most at risk are clearly the youngest two. In 1990, 23.1% of 18-29 year-olds and 21.9% of 30-39 year-olds had at least four new sexual partners, while 40-54 year-olds had 12.5%. This value actually increased for the youngest respondents, to 24.2% in 1992, and for the 40-54 year-olds, to 14.7%. The latter group still maintained the majority of its respondents in the one and

two- "new sexual partners" category, as in 1990, but the overall increase in multiple new sexual partners demonstrated by the youngest group is a clear indication of a change in sexual activity trends.

Nearly five percent less of individuals among the second-youngest group had four or more new partners in 1992, however, the marked increase of those with two or three partners (34.3% in 1990 to 57.6% in 1992) and the subsequent decrease of the proportion with only one partner (43.8% to 25.4%) shows that an overall increase in numbers of new sexual partners is still in existence for the general population sample in this age group, if not necessarily for a few specific individuals with very high numbers of new partners.

TABLE 9 **Age and Number of New Partners in 1990**

NUMBER OF NEW SEXUAL PARTNERS						
AGE		1	2	3	4 +	Total
18 - 29	Count	45	25	17	26	113
	% within age	39.9	22.1	15.0	23.1	100.1
	% within number	48.9	49.0	56.7	59.1	52.1
30 - 39	Count	28	15	7	14	64
	% within age	43.8	23.4	10.9	21.9	100.0
	% within number	30.4	29.4	23.3	31.8	29.5
40 - 54	Count	17	8	3	4	32
	% within age	53.1	25.0	9.4	12.5	100.0
	% within number	18.5	15.7	10.0	9.1	14.7
55+	Count	2	3	3	0	8
	% within age	25.0	37.5	37.5	0.0	100.0
	% within number	2.2	5.9	10.0	0.0	3.7
Total	Count	92	51	30	44	217
	% within age	42.4	23.5	13.8	20.3	100.0
	% within number	100.0	100.0	100.0	100.0	100.0

TABLE 9a Age and Number of New Partners in 1992

		NUMBER OF NEW SEXUAL PARTNERS				
AGE		1	2	3	4+	TOTAL
18 - 29	Count	28	50	22	32	132
	% within age	21.2	37.9	16.7	24.2	100.0
	% within number	47.5	60.2	48.9	68.1	56.4
30 - 39	Count	15	17	17	10	59
	% within age	25.4	28.8	28.8	17.0	100.0
	% within number	25.4	20.5	37.8	21.3	25.2
40 - 54	Count	12	12	5	5	34
	% within age	35.3	35.3	14.7	14.7	100.0
	% within number	20.3	14.5	11.1	10.6	14.5
55+	Count	4	4	1	0	9
	% within age	44.4	44.4	11.1	0.0	99.9
	% within number	6.8	4.8	2.2	0.0	3.8
TOTAL	Count	59	83	45	47	234
	% within age	25.2	35.5	19.2	20.1	100.0
	% within number	100.0	100.0	100.0	100.0	99.9

Gender

The differences between males' and females' numbers of new sexual partners are fairly large, regardless of the category cut-off marks one uses, whether more than one, more than two, or more than three partners. Overall, males account for 57.7% (124 of 215) of all respondents who had a new sexual partner in 1990, and 63.5% (146 of 230) of this group in 1992 was male.

In 1990 (Table 10), 66.9% of males had had more than one new partner, while

44.0% of females did so. This number increases significantly for both genders in 1992, to 81.5% of males and 63.1% of females (Table 10a). If one looks at those with more than two new partners, the numbers for male and female are, respectively, 45.9% and 16.5% in 1990, a nearly 3:1 ratio in favour of males having greater numbers of partners. In 1992 the proportions with more than two new partners converge slightly, due to a sharp increase in females' proportion to 25.0%, males remaining fairly consistent at 47.9%. As suggested with gender risk assessments, the increase in females' reportedly higher numbers of new sexual partners may involve a move towards more realistic personal estimates in 1992, although the size of the discrepancy between the genders, where males are nearly double, indicates the continued presence of some type of mis-estimation on numbers of sexual partners.

Upon examining the proportions of respondents with a clearly large number of new sexual partners (at least four) and who are, hence, also at the greatest risk, the gender difference in the risk of contracting HIV becomes very evident. Fully 28.2% of males in 1990 and a similar number, 27.4%, in 1992 can be found in this high objective risk category. Only 7.7% of females in 1990 formed part of this category, and only slightly more in 1992, at 8.3%. In fact, both years show a greater proportion alone of males with four or more new sexual partners (28.2% and 27.4%, in 1990 and 1992 respectively) than of females with merely three or more new partners (16.5% and 25.0% in the respective years).

TABLE 10 Gender and Number of New Partners in 1990

		NUMBER OF NEW SEXUAL PARTNERS				
SEX		1	2	3	4+	TOTAL
Male	Count	41	26	22	35	124
	% within male	33.1	21.0	17.7	28.2	100.0
	% within number	44.6	51.0	73.3	83.3	57.7
Female	Count	51	25	8	7	91
	% within female	56.0	27.5	8.8	7.7	100.0
	% within number	55.4	49.0	26.7	16.7	42.3
TOTAL	Count	92	51	30	42	215
	% within sex	42.8	23.7	14.0	19.5	100.0
	% within number	100.0	100.0	100.0	100.0	100.0

TABLE 10a Gender and Number of New Partners in 1992

		NUMBER OF NEW SEXUAL PARTNERS				
SEX		1	2	3	4+	TOTAL
Male	Count	27	49	30	40	146
	% within male	18.5	33.6	20.5	27.4	100.0
	% within number	46.6	60.5	68.2	85.1	63.5
Female	Count	31	32	14	7	84
	% within female	36.9	38.1	16.7	8.3	100.0
	% within number	53.4	39.5	31.8	14.9	36.5
TOTAL	Count	58	81	44	47	230
	% within sex	25.2	35.2	19.1	20.5	100.0
	% within number	100.0	100.0	100.0	100.0	100.0

4.1.4 Condom Use

When surveyed in 1990, almost 45% of the respondents with a new sexual partner in the previous two years (N=222) stated that they never used a condom (See Table 11 and Figure 1)[17]. Conversely, only 15% consistently used a condom during sexual intercourse. Those proportions changed significantly in 1992. Fully 2/3 more people in the 1992 sample always used a condom (25.0% of 236 respondents) than in 1990, while the proportion who did so part of the time increased from 43.1% in 1990 to 46.5% in 1992. These two increases in condom use largely account for the substantial 16.3% decrease between surveys from 44.8% to 28.5% for those who never used condoms at all. The beginnings of the effect of some sexually-related HIV awareness can be presumed from the specific reduction of the non-condom using population segment, and even occasional use is an improvement over a complete rejection of this HIV-prevention method.

Obviously, several factors may be at play in the shift of condom use over a two-year period. It seems that, education and awareness-raising on HIV and AIDS aside, the extremely significant rise in the number of new sexual partners in almost 20% of the population could be related to the increase in condom use. Regardless, the increase in

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[17] Only those respondents who claimed to have had a new sexual partner in the previous two years were asked about their frequency of condom use, presumably because this group is considered as being the greatest risk for contracting HIV.

frequency of condom use among adult Albertans between 1990 and 1992 is an optimistic result for those attempting to raise levels of health awareness and prevention practices around HIV and AIDS.

Figure 1 - Condom Use in 1990 and 1992 Samples (Graph)

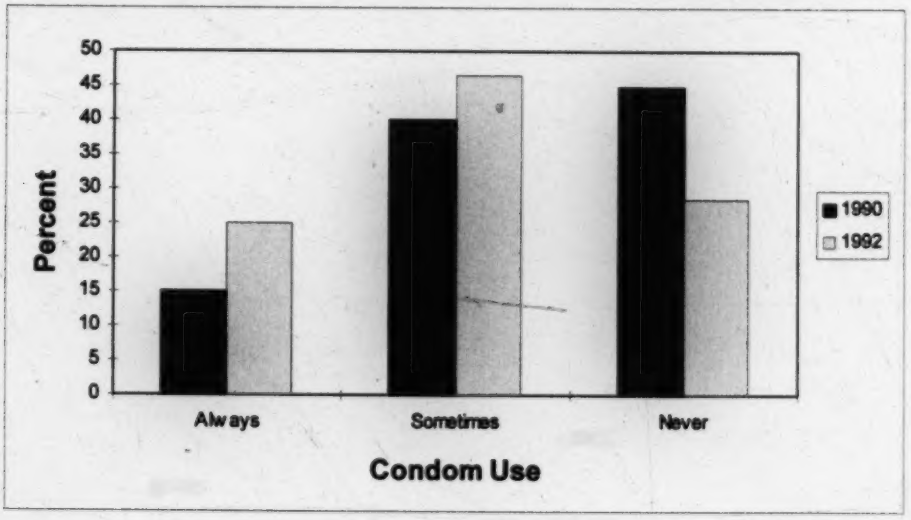

TABLE 11 Frequency of Condom Use in 1990 and 1992

1990					
Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
All of the Time	1	33	2.7	15.1	15.1
Most of the Time	2	33	2.6	14.9	30.0
Some of the Time	3	55	4.4	25.2	55.2
Not at All	4	98	7.9	44.8	100.0
No Response	0	10	.8	missing	
Not Applicable	9	1015	81.5	missing	
	Total	1245	100.0	100.0	

1992					
Value Label	Value	Frequency	Percent	Valid Percent	Cumulative Percent
Always	1	59	4.6	25.0	25.0
Never	2	67	5.2	28.5	53.5
Sometimes	3	109	8.5	46.5	100.0
No Response	0	13	1.0	missing	
Not Applicable	9	1030	80.6	missing	
	Total	1277	100.0	100.0	

Age

Given the very modern nature of the AIDS epidemic and related knowledge, attitudes, and behaviours, the age of an individual is likely to have a great influence on her rate of condom use with respect to preventions against contracting this disease. Within the categories of condom use "All", "Some" and "None" of the time, the proportion of each age represented shows some key tendencies for age group description.

In 1990, the 18-29 year-olds make up over 60% of those who consistently use condoms, whereas all respondents over 39 years comprise only 12.2% of this category (Table 12). Only 43.4% of those who never use condoms are from the youngest age group. With respect to consistent lifestyle patterns, the 30-39 year-olds and those over 54 years of age have similar membership in both "All" and "No" condom use categories, in general keeping with their overall population sample membership. However, the 40-54 year-olds comprise a much higher proportion of those who never use condoms (24.2% "never"), and in disproportion to their representation in the population sample (14.5% of the total number), than of those who always do (6.1% "always").

Unfortunately, 18-29 year-olds were more than twice as likely in 1990 to never use a condom than to consistently use one (17.5% "always"; 37.7% "never"), while those 30-39 were more than three times as likely to do so (43.1% "never"; 13.8% "always"). The most notable difference here is, however, the trend noted above for the high population proportion never using condoms among the 40-54 year-olds. Three quarters of this group never use condoms, while only 6.3% consistently do.

In 1992, improvement within each category of condom use is noted for the youngest group. These respondents comprise 68.3% of those who always use condoms and only 39.4% of those who never do. Unfortunately, 40-54 year-olds exhibit a similar pattern to the one in 1990, with not a single respondent who always uses condoms and

making up 31.8% of all respondents who never use condoms. This particular age group, being neither school-educated in HIV/AIDS, nor experienced in the communication of sexuality and related topics of health concern, may be unwittingly down-playing its vulnerability to HIV in preference for the comforting knowledge that it is not a typically high-risk group. The resulting behaviours (lack of condom use) are potentially dangerous. It is, however, important to bear in mind that the youngest groups who are the greatest concern according to their risk status, subjectively and objectively, are also those who occupy the greatest proportion of consistent condom users, a positive finding.

Among the four age groups, those over 54 years had the highest percent using condoms all the time in 1990 (22.2%, identical to the 1992 rate). This proportion is deceiving, however, since, for all condom use categories in both years, this age group only consisted of nine individuals at "objective risk" who were even asked this question, which inflates the percentage and also serves as a good indication that this group is not at a very high risk in any case. Similarly, the "never" proportions of 44.4% and 66.7% in 1990 and 1992, respectively, represent only four and six people. Thus, the focus here will rest on the remaining three age groups' condom practices.

TABLE 12 Age and Condom Use in 1990

		CONDOM USE			
AGE		All of the Time	Sometimes	Not At All	TOTAL
18 – 29	Count	20	51	43	114
	% within age	17.5	44.7	37.7	99.9
	% within use	60.6	58.0	43.4	51.8
30 – 39	Count	9	28	28	65
	% within age	13.8	43.1	43.1	100.0
	% within use	27.3	31.8	28.3	29.5
40 – 54	Count	2	6	24	32
	% within age	6.3	18.8	75.0	100.1
	% within use	6.1	6.8	24.2	14.5
55+	Count	2	3	4	9
	% within age	22.2	33.3	44.4	99.9
	% within use	6.1	3.4	4.0	4.1
TOTAL	Count	33	88	99	220
	% within age	15.0	40.0	45.0	100.0
	% within use	100.1	100.0	99.9	99.9

Among the three youngest categories, consistent condom use shows an inverse relationship with age in 1990, where consistent condom users form 17.5% of the youngest respondents, 13.8% of the 30-39 year-olds, and 6.3% of 40-54 year-olds. The much higher proportion of respondents in all groups who "never" use condoms (37.7%, 43.1%, and 75.0%, respectively, in groups of increasing age) illustrates how disappointingly low the numbers are who protect themselves against HIV infection by using condoms. As age increases, the likelihood of never using condoms also increases greatly, so that, while 18-

29 year-olds are more than twice as likely to never than to always use condoms, 30-39 year-olds are over three times as likely to do the same, and 40-54 year-olds are 12 times as likely to never, as to always, use condoms. Although older and having fewer new sexual partners than the younger groups, the 40-54 year-olds seem to be putting themselves at a considerable risk, nonetheless, when fully 3/4 never use condoms, and, at the most, 18.8% use condoms "sometimes".

A somewhat altered picture takes shape when examining the results from the 1992 survey sample (Table 13). Over 30% of the youngest group now always use condoms (a 13% increase from 1990), and 18% fewer (19.5%) claim they never use condoms at all. These are encouraging changes for this high risk age group. For 30-39 year-olds a similar improvement is noted, though the changes are not as extreme. In 1992 28.8% of this groups always use condoms, over twice the 1990 rate, and only half the proportion from 1990 (22.0%) never uses condoms at all. The only age group which shows an actual decrease in the rate of consistent condom use is the 40-54 year-old group, who show no one consistently using condoms in 1992. The "never" condom users decrease slightly to 61.8%, however, this decrease is due only to the 20% more who sometimes use condoms (18.8% to 38.2%).

This result for objectively high-risk Albertans over the age of 39 years is not specifically promising for concrete behavioural change in protective measures against HIV. Thus, while acknowledging that improvement has occurred between the two survey

years, it is important to note that it is clearly the two youngest age groups who show movement in a positive direction, with 80% of both groups practicing at least some condom use.

TABLE 13 Age and Condom Use in 1992

		CONDOM USE			
AGE		Always	Sometimes	Never	TOTAL
18 – 29	Count	41	66	26	133
	% within age	30.8	49.6	19.5	99.9
	% within use	68.3	60.6	39.4	56.6
30 – 39	Count	17	29	13	59
	% within age	28.8	49.2	22.0	100.0
	% within use	28.3	26.6	19.7	25.1
40 – 54	Count	0	13	21	34
	% within age	0.0	38.2	61.8	100.0
	% within use	0.0	11.9	31.8	14.5
55+	Count	2	1	6	9
	% within age	22.2	11.1	66.7	100.0
	% within use	3.3	.9	9.1	3.8
TOTAL	Count	60	109	66	235
	% within age	25.5	46.4	28.1	100.0
	% within use	99.9	100.0	100.0	100.0

Gender

Males use condoms more often than females overall, both on a consistent basis and in terms of periodic use. While 17.8% of males always used condoms in 1990, only 11.0% of females did so (Table 14). Intermittent use ("some" or "most" of the time) was

more similar, with males still slightly higher, by 2.6%, at 41.1%. This left just over 2/5 of the males never using condoms, and more than half of the females not doing so. In comparison to consistent use, males "never" used condoms more than twice as often, whereas females showed a non-use rate which was almost five times the rate of consistent use. This result is not entirely logical, since males who are using condoms are most often using them with female sexual partners, and so the proportionate gender values should be much closer in reality. Again an over/under-estimation effect may also be at play here, with males over-estimating condom use. This fact is explainable potentially by the fact that males are still overridingly the individuals who initiate condom use during sexual intercourse.

By 1992, some important and encouraging changes are evident for both genders. Males have increased their consistent condom use to 25.7% and decreased their proportion who never used condoms by over 15% to equal the consistent user rate of 25.7%. Those males who use condoms some of the time (48.6%) thus represent double each of the other two categories. Women also improve their condom use by 1992, where a large increase of 12.3% of consistent condom users more than doubles their 1990 rate and brings them close to the males' 1992 rate. Although the females who never use condoms still outnumber the consistent users (33.7% to 23.3%), this 16.8% decrease in non-use from 50.5% in 1990 is indeed a large and positive one.

TABLE 14 Gender and Condom Use in 1990 and 1992

1990	CONDOM USE				
SEX		All of the Time	Sometimes	Not At All	TOTAL
Male	Count	23	53	53	129
	% within male	17.8	41.1	41.1	100.0
	% within use	69.7	60.2	53.5	58.6
Female	Count	10	35	46	91
	% within female	11.0	38.5	50.5	100.0
	% within use	30.3	39.8	46.5	41.4
TOTAL	Count	33	88	99	220
	% within sex	15.0	40.0	45.0	100.0
	% within use	100.0	100.0	100.0	100.0

1992	CONDOM USE				
SEX		Always	Sometimes	Never	TOTAL
Male	Count	38	72	38	148
	% within male	25.7	48.6	25.7	100.0
	% within use	65.5	66.1	56.7	63.2
Female	Count	20	37	29	86
	% within female	23.3	43.0	33.7	100.0
	% within use	34.5	33.9	43.3	36.8
TOTAL	Count	58	109	67	234
	% within sex	24.8	46.6	28.6	100.0
	% within use	100.0	100.0	100.0	100.0

4.2 *Subjective Risk and Objective Risk*

It seems likely that objective risk and subjective risk (self-reported AIDS risk) would be related in some way, since people's choices in new sexual partners and the number of these (objective risk) are the logical bases for building a perception of their own vulnerability to contracting HIV through sexual intercourse (subjective risk). It is important to examine the potential similarities and differences between what people's behaviours indicate their risk level to be and what their actual personal beliefs are, with respect to their own risk. Both aspects of objective risk measurement (the existence of a new sexual partner in the past two years; the number of these new sexual partners in the past two years) are considered in cross-tabulation with their subjective risk. The former objective risk analysis includes the entire survey sample, whereas the latter includes only those who answered "yes" to the "new partner" question.

4.2.1 New Sexual Partner

In both survey years the people who claimed to have had a new partner over the past two years were much more likely to consider themselves at higher levels of risk than those without a new sexual partner (See Tables 15 and 15a). The "yes" group (at least one new sexual partner) contained 13.3% considering themselves at medium or high risk in 1990, a number which remained fairly stable to 1992 (12.7%). Conversely, of the "no" new partner respondents, only 5.5% in 1990 and 5.7% in 1992 thought they were at medium or high risk.

When considering these proportions, it is important to remember that the majority of respondents in both years answered "no" to the new sexual partner question, and hence, for example, a much higher proportion of the people who thought they were at high risk in 1990 had not actually had a new partner (77.3%) than had had one (22.7%). In 1992, this ratio climbed to over 4:1 (81.0% and 19.0%, respectively). In other words, although less than 1/5 of the population sample was objectively at risk, a much greater proportion of individuals overall still considered themselves at risk, either mistakenly, or for other reasons than based on a history of sexual intercourse with several partners. However, this pattern is similar for all of the subjective risk categories, except for the "None" category, where almost 90% were people who had not had a new sexual partner. Thus, little change occurred over time in this respect.

Where some movement occurred was among the general population sample who considered themselves at any risk at all of contracting HIV. Of those objectively "at risk" ("yes" respondents) in 1990, 69.3% thought they were at some degree of risk. This proportion increased to 73.3% in 1992. As well, even among those without a new partner, 43.1% still considered themselves at risk at all in 1990, increasing to 47.5%, or almost half, in 1992. Thus, there exists, in both population groups, a sizeable degree of risk acknowledgment. However, as positive as these numbers may appear, it is still problematic that, considering the low rate of consistent condom use in both years, almost 1/3 of people with a new sexual partner in the past two years in 1990 and just over 1/4 of that group in 1992 actually perceived themselves to be at absolutely no risk of contracting

HIV at all.

TABLE 15 Sex with New Partner and Self-Reported AIDS Risk in 1990

1990		CHANCES OF GETTING AIDS VIRUS				
SEX With New Partner Last 2 Years		High	Medium	Low	None	TOTAL
YES	Count	5	24	122	67	218
	% within Sex	2.3	11.0	56.0	30.7	100.0
	% within Chances	22.7	38.7	24.6	10.6	18.0
NO	Count	17	38	373	566	994
	% within Sex	1.7	3.8	37.5	56.9	99.9
	% within Chances	77.3	61.3	75.4	89.4	82.0
TOTAL	Count	22	62	495	633	1212
	% within Sex	1.8	5.1	40.8	52.2	99.9
	% within Chances	100.0	100.0	100.0	100.0	100.0

TABLE 15a **Sex with New Partner and Self-Reported AIDS Risk in 1992**

1992		CHANCES OF GETTING AIDS VIRUS				
SEX With New Partner Last 2 Years		High	Medium	Low	None	TOTAL
YES	Count	4	26	143	63	236
	% within Sex	1.7	11.0	60.6	26.7	100.0
	% within Chances	19.0	38.8	25.3	10.6	18.9
NO	Count	17	41	423	532	1013
	% within Sex	1.7	4.0	41.8	52.5	100.0
	% within Chances	81.0	61.2	74.7	89.4	81.1
TOTAL	Count	21	67	566	595	1249
	% within Sex	1.7	5.4	45.3	47.6	100.0
	% within Chances	100.0	100.0	100.0	100.0	100.0

4.2.2 Number of New Sexual Partners

The respondents who were asked to identify the number of new sexual partners they had had in two years numbered 218 in 1990 and 236 in 1992. Among those at objective risk, six individuals (2.8%) in 1990 and five (2.1%) in 1992 considered themselves at high risk. Although it might be expected that having had a higher number of new sexual partners in the preceding two years would lead an individual to consider themselves more at risk than had they had a lesser number, this was found to be not necessarily the case. Numbers of new sexual partners were categorized by those with one, two, three, and four or more new partners. In 1990, the greater the number of partners, up to and including two or three partners, generally, the higher the proportion of respondents who considered themselves to be at either medium or high risk (6.6% with one, 20.0%

with two, and 20.0% with three).

However, only 18.3% in the highest objective risk group with four or more new partners perceived themselves at medium or high risk. It is conceivable that precisely those groups who are most careless or extravagant (numerically) in their sexual habits may act so for the same reasons which lead them to perceive themselves at a low risk, namely, that they "belong" into a category of individuals who feels, based on stereotypes, invulnerable to HIV or operates under the "other person syndrome" and so is in denial of their real risk.

Groups with greater numbers of partners were less likely to believe they had no risk at all, with ranges from 38.5% for those with one partner descending constantly to 11.5% for those with more than three (Table 16). This low figure for the group with four or more partners is accounted for by a large proportion (70.1%) in the "low" risk category. Yet, it is worth repeating the fact that this is a large proportion in a low subjective risk category, considering the group's extremely high objective risk. Clearly, the personal risk perceptions of people at high risk are at odds with their sexual behaviour. It is interesting to note that not one person with 4, 5, 6, 7, or 8 new sexual partners in 1990 considered themselves to be at a high risk for contracting HIV. It is worth bearing in mind the possibility that some of these indivduals may have a higher rate of condom use or other perceived protective measures in place precisely, because of their higher objective risk, and are, therefore, potentially more informed. This may well lower

levels of perceived personal risk to the HIV.

TABLE 16 Number of Partners and Self-Reported AIDS Risk in 1990

1990		CHANCES OF GETTING AIDS VIRUS				
NUMBER of New Sex Partners		High	Medium	Low	None	TOTAL
1	Count	1	5	50	35	91
	% within Number	1.1	5.5	54.9	38.5	100.0
	% within Chances	16.7	20.8	42.0	53.0	42.3
2	Count	2	8	22	18	50
	% within Number	4.0	16.0	44.0	36.0	100.0
	% within Chances	33.3	33.3	18.5	27.3	23.3
3	Count	1	5	16	8	30
	% within Number	3.3	16.7	53.3	26.7	100.0
	% within Chances	16.7	20.8	13.4	12.1	14.0
4+	Count	2	6	31	5	44
	% within Number	10.9	7.4	70.1	11.5	99.9
	% within Chances	33.3	25.0	26.1	7.6	20.5
TOTAL	Count	6	24	119	66	215
	% within Number	2.8	11.2	55.3	30.7	100.0
	% within Chances	100.0	99.9	100.0	100.0	100.1

The changes by 1992 are disconcerting, as they indicate an even greater discrepancy between objective and subjective risk assessments. Only the lowest risk group increased its perception of medium-high risk (6.6% to 13.6%), but this 1992 number includes no individuals in the high subjective risk category, but rather all in the medium category (Table 17). Those with two partners decreased high/medium risk

perception by a large 11.6%, accounting for more than half of the 1990 proportion, while those with three parters decreased by 2.3%. In both of these objective risk groups, the "no risk" proportion also decreased somewhat, with the resulting increase occurring in the "low" category (for two-partner respondents, a 15% increase, and for those with three, a 6.7% increase).

TABLE 17 Number of Partners and Self-Reported AIDS Risk in 1992

1992		CHANCES OF GETTING AIDS VIRUS				
NUMBER of New Sex Partners		High	Medium	Low	None	TOTAL
1	Count	0	8	30	21	59
	% within Number	0.0	13.6	50.8	35.6	100.0
	% within Chances	0.0	30.8	21.4	33.3	25.2
2	Count	1	6	49	27	83
	% within Number	1.2	7.2	59.0	32.5	99.9
	% within Chances	20.0	23.1	35.0	42.9	35.5
3	Count	2	6	27	10	45
	% within Number	4.4	13.3	60.0	22.2	99.9
	% within Chances	40.0	23.1	19.3	15.9	19.2
4+	Count	2	6	34	5	47
	% within Number	3.5	9.2	64.5	22.8	100.0
	% within Chances	40.0	23.1	24.3	7.9	20.1
TOTAL	Count	5	26	140	63	234
	% within Number	2.1	11.1	59.8	26.9	99.9
	% within Chances	100.0	100.1	100.0	100.0	100.0

Most noticeably, the highest risk group, as defined for the *A.A.S.* (4+ partners),

actually experienced a significant decrease in the proportion of people who thought they were at high/medium risk, from 18.3% to 12.7%, and an accompanying increase to double the 1990 proportion of those who believed themselves to be at no risk at all (22.8%). This group decreased its proportion in the "high" subjective risk category alone by over 2/3, from 10.9% to 3.5%. Thus, instead of improvement in the realistic perceptions of those at greatest risk, whom educators and health officials would like to focus on, this two-year span indicates the opposite effect from 1990 to 1992. It does not seem that individuals in Alberta necessarily use the objective risk level of their lifestyles, in terms of new sexual partners, as a basis for understanding the level of their own personal risk of contracting the deadly HIV.

4.3 Risk Factors in Condom Use

4.3.1 Subjective Risk

The categories for possible responses to the question on frequency of condom use numbered four in 1990 and only three in 1992 (Table 19; see also Appendices 1 and 2). Thus, in order to compare frequency of condom use between 1990 and 1992, the two middle categories in 1990 ("some" and "most of the time") were collapsed together to create one middle category ("sometimes/most of the time") similar to "sometimes" in 1992. The cross-tabulations of each risk variable with frequency of condom use (Table 18) showed some distinct changes over time within the relationships. Among the 1990 sample segment with a new partner who claimed at least some chance of being at risk for

contracting HIV, 40.4% (61/151) never used a condom (Table 18). This is nearly three times the proportion who consistently used a condom (15.2%, or 23/151). In 1992, a significant improvement is evidenced among those people who perceived themselves to be at any risk, as only 26.2% (45/172) never used condoms, and almost the same proportion, 25.0% (43/172), stated that they consistently used a condom, almost 10% more than in 1990. However significant this change, these numbers do not seem to show a clear effect of an individual's subjective risk on his or her condom use among the significantly "at risk" groups (See "High/Medium Subjective Risk" in Table 18a). In 1990, 37.9% never used condoms, and in 1992, 26.7% never did so, while only 17.2% and 20%, respectively, always used condoms.

TABLE 18 Self-Reported AIDS Risk and Condom Use in 1990 and 1992

1990	CONDOM USE			
SELF – REPORTED RISK	Always	Sometimes/ Most of the time	Never	Row Total
High	3 (60.0)	1 (20.0)	1 (20.0)	5 (100.0)
Medium	2 (8.3)	12 (50.0)	10 (41.7)	24 (100.0)
Low	18 (14.8)	54 (44.3)	50 (41.0)	122 (100.1)
None	10 (15.2)	21 (31.8)	35 (53.0)	66 (100.0)
Column Total	33 (15.1)	88 (40.4)	97 (44.5)	218 (100.0)

1992	CONDOM USE			
SELF – REPORTED RISK	Always	Sometimes/ Most of the time	Never	Row Total
High	1 (20.0)	4 (80.0)	0 (0.0)	5 (100.0)
Medium	5 (20.0)	12 (48.0)	8 (32.0)	25 (100.0)
Low	37 (26.1)	68 (47.9)	37 (26.1)	142 (100.1)
None	15 (24.2)	25 (40.3)	22 (35.5)	62 (100.0)
Column Total	58 (24.8)	109 (46.6)	67 (28.6)	234 (100.0)

TABLE 18a **Self-Reported AIDS Risk and Condom Use in 1990 and 1992 (recoded)**

1990	CONDOM USE			
SELF – REPORTED RISK	Always	Sometimes/ Most of the Time	Never	Row Total
High / Medium	5 (17.2)	13 (44.8)	11 (37.9)	29 (99.9)
Low	18 (14.8)	54 (44.3)	50 (41.0)	122 (100.1)
None	10 (15.2)	21 (31.8)	35 (53.0)	66 (100.0)
Column Total	33 (15.1)	88 (40.4)	97 (44.5)	218 (100.0)

1992	CONDOM USE			
SELF – REPORTED RISK	Always	Sometimes/ Most of the Time	Never	Row Total
High / Medium	6 (20.0)	16 (53.3)	8 (26.7)	30 (100.0)
Low	37 (26.1)	68 (47.9)	37 (26.1)	142 (100.1)
None	15 (24.2)	25 (40.3)	22 (35.5)	62 (100.0)
Column Total	58 (24.8)	109 (46.6)	67 (28.6)	234 (100.0)

Conversely, where a specific change can be noted from 1990 to 1992 is in the frequency of condom use by the "low" and "no risk" individuals. Somewhat unexpectedly, and considering the lack of effect of subjective risk perception on individuals' condom use among higher risk individuals, these lower self-reported risk groups are the groups which demonstrate a noticeable increase in condom use over the two years. Eleven percent more individuals considering themselves at "low" risk for HIV contraction show consistent condom use in 1992 (almost doubling, from 14.8%, 18/122, to 26.1%, 37/142), and, when considered in combination with individuals at "no subjective risk", the combined group increased their condom use by 10.6%, from 14.9% (28/188) in 1990 to 25.5% (52/204) in 1992.

This indicates an increase in 1992 of 71.1% of the 1990 rate within this combined group alone. Most significant is the large increase in condom use by the group who considers itself "not at risk at all". Over 37% more of these individuals used condoms at least some of the time in 1992 than in 1990 (47.0% to 64.5%). This point would be consistent with the possibility stated above that these individuals might feel safer precisely due to their condom use.

4.3.2 Objective Risk

A similar pattern is seen when considering the objective risk categories as they relate to condom use (Table 19). Those individuals (17.9% in 1990 and 18.7% in 1992) who had had a new sexual partner in the previous two years were the only ones who were

asked about condom use, exhibiting a 16.2% decrease in the "never" category and a 10% increase in the "always" category for condom use. Again, the major influence on condom use, as for the overall sample, was the passage of two years' time, which showed an increase in frequency of condom use.

More specifically, the sample segment which would be most likely expected to demonstrate a higher frequency of condom use is the segment of individuals who have had more than one new sexual partner over the previous two years (See Table 20). Although slightly fewer of these individuals never use condoms (39.5%) than the general group asked (44.8%) in 1990, the figures for both "always" and "never" are comparable to the group of respondents who claimed at least some subjective risk in 1990. Thus, 39.5% (49/125) "never" used condoms, among those with more than one new sexual partner, as compared with 40.4% at subjective risk; likewise, 15.3% (19/125) "always" used condoms, as compared with 15.2% among those at subjective risk. The only circumstance under which having had more than one new sexual partner in the previous two years seems to be related to a higher rate of condom use is in 1992, where 6% fewer of these individuals never use condoms (22.5% or 39/173) than the questioned sample as a whole (28.5%). The number of consistent condom users is only slightly higher (26.6% or 46/173) among this multiple-partner group than among the general sample with new sexual partners in the past two years in 1992 (25%).

TABLE 19 Frequency of Condom Use Among Those with a New Partner in 1990 and 1992

1990	CONDOM USE (VAR 348)
Count	Yes
1 All of the Time	33 (15.1)
2 Most of the Time	33 (15.1)
3 Some of the Time	55 (25.1)
4 Not At All	98 (44.7)
Column Total	219 (100.0)

1992	CONDOM USE (VAR 302)
Count	Yes
1 Always	59 (25.1)
3 Sometimes	109 (46.4)
2 Never	67 (28.5)
Column Total	235 (100.0)

4.3.3 Number of New Sexual Partners

The 1990 sample seems to show no significant relationship between a greater number of new sexual partners and increased condom use unless one looks at the difference between those with three or more, and those with less than three, partners (Table 20, below). For those with at least three new sexual partners, the percentage of at least some condom use is 23.5% higher than for those with less than three (70.3% compared to 46.8%). Conversely, this type of expected difference is not noted overall for "objective risk" categories according to their consistent ("Always") use of condoms, since

respondents with less than three partners claim consistent condom use more than those with more.

The 1992 sample does indicate a modest increase in condom use at all, as the number of an individual's new sexual partners (to a maximum of three) increases (55.9% among those with one partner, 66.7% for those with two, and 88.9% for those with three partners). The more noticeable difference, again, is in the category of "three or more" new partners, but this is only when regarding the much larger percent who use condoms "some/most of the time" (which accounts for the subsequent decrease in the "never" category for "three or more"). The group with at least three partners uses condoms "sometimes" 2/3 more often than does the group with less than three partners (62% compared to 37.1%).

TABLE 20 Number of New Sexual Partners and Frequency of Condom Use in 1990 and 1992

1990	CONDOM USE			
NUMBER OF NEW SEXUAL PARTNERS	Always	Sometimes/ Most of the time	Never	Row Total
1	14 (15.6)	28 (31.1)	48 (53.3)	90 (100.0)
2	7 (13.7)	17 (33.3)	27 (52.9)	51 (99.9)
3	3 (10.0)	19 (63.3)	8 (26.7)	30 (100.0)
4+	9 (20.5)	21 (47.7)	14 (31.8)	44 (100.0)
Column Total	33 (15.3)	85 (39.5)	97 (45.1)	215 (99.9)

1992	CONDOM USE			
NUMBER OF NEW SEXUAL PARTNERS	Always	Sometimes/ Most of the time	Never	Row Total
1	12 (20.3)	21 (35.6)	26 (44.1)	59 (100.0)
2	23 (28.4)	31 (38.3)	27 (33.3)	81 (100.0)
3	12 (26.7)	28 (62.2)	5 (11.1)	45 (100.0)
4+	11 (23.4)	29 (61.7)	7 (14.9)	47 (100.0)
Column Total	58 (28.0)	109 (47.0)	65 (28.0)	232 (100.0)

When comparing condom use over the two-year span for people with several new sexual partners, the same pattern of significantly increased condom use emerges in 1992 as demonstrated earlier for other variable groups. Only a slightly greater increase in consistent condom use (11.3% increase) than the general sample questioned (9.9% increase) exists. Another difference is the slightly greater decrease (almost 17.0% less), within this multiple-partner group, of those who never use condoms (from 39.5% in 1990 to 22.5% in 1992).

4.4 Individual Influences of Factors on Risk and Condom Use

4.4.1 Gender/Age & Condom Use

When the analysis of all six variables is done, controlling for all other variables within each relationship, some differences between the 1990 and 1992 samples appear, although the presumed relationship between subjective risk variables and condom use is

not found in either sample (Tables 21 and 22). Of particular interest is the relationship between each of gender and age and other variables in both 1990 and 1992. In 1990, there is a small yet statistically significant negative relationship between gender and condom use (r^2=.016; p=.035), indicating a higher rate of condom use among females than males. This is contrary to the cross-tabulation results indicating much higher condom use by males and is a possible example of the gender effect of mis-estimation. (Although it is not statistically significant, it is interesting to note that the value for 1992 is positive ($r^2=6.8x10^{-4}$; p=.345)). Likewise, an increase in age in the 1990 sample is also associated with a slightly increased frequency of condom use (r^2=.024; p=.012). These relationships are not statistically significant in the 1992 sample.

4.4.2 Gender/Age & Risk

Age in the 1992 population sample exhibits a significant, if small, inverse relationship with the number of new sexual partners over two years. As expected, the older a person is, the fewer new sexual partners they are likely to have had recently in 1992 (r^2=.038, p=.001), although this does not indicate a strong relationship at all, and the weak correlation may actually be attributable to the sample size. Given the very low (or non-existent) condom use rate among older (specifically, 40 – 54 year-old) respondents, this implication that they may not be at all at any lower objective risk, in terms of numbers of partners, is a cause for concern among this middle-aged population. Due to social perception barriers, these individuals have perhaps experienced a more difficult time accepting and internalizing the HIV-prevention messages. Finally,

confirming the cross-tabulation results, females in both years are likely to have had fewer new sexual partners than the males are (r^2=.048, p=.001 in 1990, and r^2=.041, p=.001 in 1992).

The only other relationship which may be of statistical significance, but which is quite small, is that between subjective risk and age in 1990, where the former seems to increase slightly with age. This relationship is fairly weak in any case, as the two variables share only a small proportion of variance within the sample (r^2=.014, p=.045).

4.4.3 Objective Risk & Condom Use

The sole finding which confirms our exploration of a possible relationship between risk and condom use is demonstrated in 1992, where an increase in sex partner numbers indicates a small, yet statistically significant increase in frequency of condom use (r^2=.027, p=.006). Conversely, a small, negative association is noted in 1990 (r^2=.012, p=.055) wherein condom use actually decreases with an increase in number of sexual partners. The latter is indeed unexpected and somewhat surprising, based on the assumption of causal influences affecting condom use expected by AIDS educators and health officials. Neither relationship is demonstrated for subjective risk and condom use in either sample.

4.4.4 Subjective Risk & Condom Use

The 1990 and 1992 sample years show an opposite effect in the association between subjective risk and condom use, which, although not statistically significant, is positive in 1990 (r^2=.006, p=.134) and negative in 1992 (r^2=.006, p=.121). A comparison of the slopes of each of the variables regressed with condom use, between 1990 and 1992, shows a very similar picture to the one painted by the multiple regression of all the variables (Tables 8 and 9). The most important finding is the absence of any significant relationship between subjective risk and condom use in *both* samples. This could be indicative of two things. Individuals may not be seeing condoms as particularly helpful in protecting them against their perceived risk of contracting the HIV. However, it is also possible that individuals do not perceive themselves at a high risk level when they *are* practicing protective measures by the increased use of condoms.

The partial slopes are very small, and the most interesting fact to note is that the slopes have opposite signs in the two years, with 1990 showing a slight, yet negligible increase in condom use with higher subjective risk assessments, and 1992 showing a slight decrease in condom use (b=.083, ±.107 in 1990 sample; b= -.070, ±.081 in 1992). Despite the opposite signs, the larger standard errors with respect to the actual partial slopes indicate that these numbers are not reliable.

TABLE 21 Determinants of Condom Use (1990)

Listwise Deletion of Missing Data			
	Mean	Std Dev	Label
VAR348	2.997	1.102	CONDOM USE (80C) *
VAR024	30.770	9.868	AGE OF RESPONDENT (2) *
VAR319	3.141	0.705	CHANCES OF GETTING AIDS VIRUS (71) *
VAR347	3.098	5.425	NUMBER OF NEW SEX PARTNERS (80B) *
VAR353	8.356	2.261	LEVEL OF EDUCATION FOR RESPONDENT (86)*
SEX2	0.581	0.494	

N of Cases = 211

Correlation, 1 - tailed Sig:

	Condom Use VAR348	AGE VAR024	Education VAR353	Subjective Risk VAR319	# Partners VAR347	SEX2
Condom Use VAR348	1.000 .					
Age VAR024	.155 .012	1.000 .				
Education VAR353	-.104 .066	-.019 .391	1.000 .			
Subjective Risk VAR319	.077 .134	.117 .045	.034 .309	1.000 .		
# Partners VAR347	-.110 .055	-.003 .482	.004 .478	-.090 .097	1.000 .	
SEX2	-.125 .035	.063 .181	-.016 .411	-.018 .400	.218 .001	1.000 .

Multiple R	.24965
R Square	.06232
Adjusted R Square	.03946
Standard Error	1.07967

TABLE 21 continued...

Analysis of Variance			
	DF	Sum of Squares	Mean Square
Regression	5	15.889023	3.17805
Residual	205	239.07104	1.16568
F =	2.72634	Signif F =	.0208

Variables in the Equation					
Variable	B	SE B	Beta	T	Sig T
Age VAR024	.017198	.007619	.154055	2.257	.0250
Subjective Risk VAR319	.082909	.106831	.053091	.776	.4386
No. of Partners VAR347	-.016010	.014123	-.078850	-1.134	.2583
Education VAR353	-.050882	.032977	-.104435	-1.543	.1244
SEX2	-.263726	.154687	-.118379	-1.705	.0897
(Constant)	2.835479	.485255		5.843	.0000

TABLE 22 Determinants of Condom Use (1992)

Listwise Deletion of Missing Data			
	Mean	Std Dev	Label
VAR302	2.224	0.817	FREQUENCY OF CONDOM USE (90A)
VAR022	30.399	10.310	AGE OF RESPONDENT (2)
VAR246	8.292	2.034	HIGHEST LEVEL OF EDUCATION (63)
VAR276	3.117	0.668	CHANCES OF GETTING AIDS VIRUS (80A)
VAR299	3.292	4.247	TOTAL NUMBER OF PARTNERS PAST 2 YRS (87B)
SEX2	0.581	0.494	

N of Cases = 231

Correlation, 1 - tailed Sig:

	Condom Use VAR302	Age VAR022	Education VAR246	Subjective Risk VAR276	# Partners VAR299	SEX2
Condom Use VAR302	1.000 .					
Age VAR022	.037 .290	1.000 .				
Education VAR246	.063 .172	.011 .437	1.000 .			
Subjective Risk VAR276	-.077 .121	-.012 .427	-.038 .281	1.000 .		
# Partners VAR299	.164 .006	-.195 .001	-.238 .285	-.093 .079	1.000 .	
SEX2	.026 .345	.018 .391	.033 .311	.053 .211	.202 .001	1.000 .

Multiple R	0.19961
R Square	0.03984
Adjusted R Square	0.01848
Standard Error	0.80914

TABLE 22 continued...

Analysis of Variance			
	DF	Sum of Squares	Mean Square
Regression	5	6.10437	1.22087
Residual	225	147.10018	.65470
F =	1.86478	Signif F =	.1015

Variables in the Equation					
Variable	B	SE B	Beta	T	Sig T
Age VAR022	.005532	.005293	.069831	1.045	.2970
Education VAR246	.026789	.026313	.066725	1.018	.3097
Subjective Risk VAR276	-.069718	.080581	-.057056	-.865	.3879
No. of Partners VAR299	.033965	.013206	.176624	2.572	.0108
SEX2	-.016564	.113788	-.009772	-.146	.8844
(Constant)	1.949967	.392011		4.974	.0000

4.4.5 Gender/Age/Education/Objective Risk & Condom Use

Age is not a strong related factor in frequency of condom use in either sample (b=.017, ±.008; b=.006, ±.005, in respective years). However, it does offer the strongest explanatory power among potential determinants of condom use in 1990, albeit extremely small. As seen above, gender of the individual has a slight relationship (b=-.264, ±.155) in 1990 only. Women have a slightly higher condom use than men. Education has little or no effect on condom use (b=-.051, ±.033 in 1990, and, in 1992, b=.027, ±.026). Objective risk (number of new sexual partners) shows a negative slope in 1990 (b=-.016, ±.014), indicating a very small, yet interestingly enough, inverse relationship with condom use, while in 1992, the slope is small and positive (b=.034, ±.013), suggesting a very mild increase in condom use as the number of new sexual partners increases.

Once many of the other variables' effects are kept constant, through multiple regression analysis, it is evident that many of the relationships anticipated through cross-

tabulation and assumptions of reasoned thought and action are not in existence, or, if at all, exist as weak associations only.

5 DISCUSSION

5.1 Risk and Condom Use

Both the absence of certain logically anticipated associations and the presence of unanticipated and, on the face of it, somewhat puzzling results require some tentative explanation and the elaboration on possible interactions of variables outside the predicted "reasoned approach" to health matters.

The expected relationship between the two risk factors (both objective and, even more importantly, subjective risk factors) and the frequency of condom use was not found in this analysis in either study sample. One would have thought that, with an increase in the risk factors of which individuals were aware (both the number of new sexual partners, assuming individuals are informed on contagion risks, and their own assessment of their chances of contracting HIV), respondents would accordingly take greater precautions in their sexual activity.

It has been shown that males generally tend to under-estimate their own risk levels, whereas females tend to relatively over-estimate theirs, if at all. Conversely, male respondents tend to over-estimate their numbers of sexual partners, while female respondents under-estimate theirs. This "mis-estimation" assessment makes sense, given the rationale that, in the general Alberta population, even with proportions of

homosexuality and bisexuality among men and women accounted for, the numbers of sexual partners for adults should be similar for men and women, as heterosexual sex partners. This produces the interesting result that the apparently higher objective risk and the reports of lower perceived risk among males contradict one another when, in fact, they may be more closely related in reality than these data sets suggest. The reverse, for women, could explain the similarly exaggerated subjective risk among women, relative to their objective risk and relative to that of men.

An interesting confirming gender pattern worth noting for subjective and objective risk develops over two years. Males increase their proportion who have a new sexual partner in the previous two years, while females decrease their proportion. This leads from a gender difference of just over 5% in 1990 to a significantly larger difference of over 10% in 1992, where the mean proportion with a new partner for the whole population is only 18.7%. During those same years, the individual gender rates of subjective risk also increase for males and decrease for females, but, due to males' relatively low perceived risk in 1990, these rates actually converge and then cross over by 1992. The interesting result is that, by 1992, males have a much higher objective risk than women, but only a very small (1%) proportional advantage in subjective risk assessment. Gender characteristics not accounted for in the data seem to clearly be at play in this discrepancy.

Further, the finding that men have a much higher overall condom use rate than

women may suffer from the same types of reporting deficiencies mentioned earlier. Specifically, this is to be noted in light of the analysis of individual variable effects, where a very small relationship between gender and condom use in 1990 indicates that females use condoms more than males. The over- and under-estimation by both females and males is understandable upon consideration of the fact that men are generally still more often the individuals initiating condom use in a sexual encounter.

The conflicting results with respect to gender suggest the need for individual, gender-separated research and analysis in greater detail (for example, along age differences), as well as the consideration of more gender-intensively specific health and prevention initiatives targetting one or the other, according to the different gender characteristics operating at each level of analysis, whether sexual, social, or in terms of relationship gender roles. One existing example of such gender-age targetting is the "Strategy 4" campaign of the *Young Adult HIV/AIDS Prevention Program* (1994), which targetted heterosexual women aged 16 – 25, with poster titles saying, for example, "You're dressed to kill. Make sure he isn't," and suggesting that a condom is the "newest in men's wear" (Alberta Health, 1994). Positively, this type of campaign is finding relevance for the intended population by applying the knowledge that similarity of speaker characteristics increases the identification with and absorption of material presented (Ng, 1993).

The low rates of condom use among respondents 40 – 54 years of age is also of

concern, considering the absence of any significant and notably large relationship between age and objective risk, as number of partners. Presumably, this population has a similar number of new partners to the younger groups, but it clearly shows a much lower rate of condom use, to the point at which three quarters of that age group *never* used condoms in 1990 and were 12 times more likely to never than to always use condoms, followed in 1992 by an actual decrease in its already very low consistent condom use rate. Not a single 40 – 54 year-old individual used condoms consistently in 1992. Given this age group's higher potential risk for HIV, presumably similar to that of the younger groups, there appear to be age characteristics (perhaps convoluted by gender characteristics, as well) at play here which require separate consideration and analysis. Perhaps a merging of the 1990 and 1992 40 – 54 year-old sample sets would permit a simultaneous analysis of gender and condom use, to examine more detailed patterns. As well, this type of analysis on other variables would allow for an investigation of the apparent consistency between objective and subjective risk for this group. Findings (or absence) of correlations between risk variables could go a ways to explain the above inconsistencies, as well.

A lack of significant levels of condom use among this age group also suggests a need for targetting older populations. This may prove to be an example of one "unsuspecting" at-risk population which has been neglected in research focus and in campaigns for HIV prevention. A matching of speaker characteristics addressed at this age group with information relevant to their interests and concerns could prove as

important here as it does for younger age groups. Many of these individuals may be in apparently monogamous, married heterosexual relationships of long duration and simply do not see themselves as being at any risk of contracting HIV through sexual contact. Although this stereotypical scenario of the middle-aged married/committed couple does exist in reality for certain individuals, it may lead to an unjustified sense of complacency among this age group in general, based simply on its perceptions of the lack of risks inherent in being of that age. This type of conclusion is clearly not a proper rationale for ignoring possibly relevant personal risks to one's health. Also, this factor may not only explain the conflicting results for this age group, but may also point to the dangers inherent in the AIDS-relevant views of many middle-aged people. Add to this misleading perception the fact that this generation was raised neither in the era of HIV and AIDS (as was the youngest group), nor in the era of open sexuality and freer expression and communication about sexuality-related isssues (as was the group aged 30 – 39), and the impression is one of refusal to examine personal risk factors and denial to acknowledge one's actual risk levels.

Overall, for all age groups, even if one takes into consideration the potential unreliability of respondents' own subjective risk assessments for any number of reasons, one would minimally expect their own level of fear of contracting HIV (relative to their subjective risk assessment) to result in a similar level of condom use as protection in reaction to this risk awareness. This was not shown to be the case. There are three possible influencing and mutually interacting reasons for this result.

The first implication of this result is that individuals may be using condoms, when at all, with different purposes than HIV protection in mind, such as birth control. In addition, it is possible that individuals' perceived risk has less to do with a concern about HIV transmission via sexual routes than by other perceived modes of transfer, whether justified (practice of illegal intravenous drug use) or not (concerns over blood donation). Condom use would clearly not have any relevance as a protective behaviour in these circumstances. Thirdly, the further convolution of this expected risk-condom use association is caused by some individuals' perception that they are, in fact, already implementing the practice of HIV-preventative measures in their lives, through, for example, serial monogamy, "knowing their partner", or asking potential new partners limited sexual history questions. They may believe that condom use is an unnecessary extra precaution.

Thus, according to the final results of the statistical analysis, there seem to be two levels of analysis in the problem of insufficient HIV-related protective behaviours within the adult Alberta population. First of all, individuals do not seem to be internalizing an awareness of the inherent riskiness of an increasing (over two years) number of new sexual partners, which would show itself in corresponding perceived risk assessments. Secondly, where individuals do sense a higher level of personal risk associated with contracting the HIV, this risk awareness does not translate into higher condom use, as suggested above. This is the case, even though condom use has been described as the

most effective means of preventing HIV transmission through sexual contact (aside from abstinence), which is, in turn, the most wide-spread means of transmitting HIV among the general adult Alberta population. What is ultimately hoped is that those people in the general population who are truly at risk are protecting themselves properly against HIV infection. Unfortunately, the result is that, at a basic level, there seems to be either a very small relationship or none at all, whether indirect (through perceived risk factors) or direct, between an individual's real risk of contracting HIV (numerous new sexual partners) and the most effective realistic protective behaviour, condom use.

The results above demonstrate that the original hypothesis based on "rational thought and action" is not supported by these observations, since neither the increased risk of subjective nor of objective nature is related to or appears to lead to increased condom use. This is in contrast to some research evidence that at least subjective risk is positively associated with the likelihood of practicing preventative behaviours (Ng, 1993). Given the maintenance by health officials and experts that condom use is still the most effective measure for preventing HIV transmission among the general population, the pertinent question then remains what, in fact, *does* determine condom use and its frequency among adult Albertans. The *All Alberta Survey* "objective risk" and "subjective risk" elements and definitions do not properly identify the determinants of condom use (such as "number of new sexual partners"), and hence, do not seem to pinpoint correctly the determinants which Albertans actually perceive as risks. Identifying these factors (see factors discussed below) would hopefully shed some light on why, why not, when, and

how often Albertans use condoms.

On a more positive note, an increase in condom use was demonstrated from the 1990 sample to the 1992 sample, indicating the increased awareness and sexual behaviour precautions being taken by a certain proportion of the population. Unfortunately, the absolute numbers of people using condoms at all and, particularly, consistently using condoms, is still extremely and disappointingly low, even in 1992. In fact, the sector of the population which has made the most significant change in its condom use behaviours is the relatively low (subjective) risk group, showing, ironically, a significant increase in its condom use between 1990 and 1992. However, this may be also be evidence of the relative discordance between objective and subjective risk, so that (at least some of) these respondents may still, in fact, be at fairly high or increasing objective risk, potentially accounting for their increased condom use. The common characteristic of this low subjective risk group may be as simple as the tendency to deny risk or to view other measures as sufficient protection against HIV.

Conversely, the presumed "target" populations who are at higher risk have not demonstrated an equal increase in condom use over time. It is important to consider the possibility that the variable measures used to determine "high risk" target populations may not offer a sufficiently precise picture of those truly at high risk in Alberta. Among others, it is possible that precisely the interaction of certain age groups with the *A.A.S.* objective risk definition is what results in increased risk in the sense in which this

analysis intends the meaning of "high risk". Further, an age effect of over- and under-estimation of sexual partners, perceived risk, and condom use may also be present, as it seems to be with gender. At the least, this is potentially borne out by the results of individual variable effects analysis demonstrating only a weak relationship between age and number of new sexual partners. This suggests that older individuals may be under-estimating their numbers of partners and, hence, their objective and subjective risk. Again, this may be relevant with the added effect of gender, as well, which could not be analyzed in this study.

In light of the above findings, future research should perhaps include an expansion of its focus to other, less-targetted populations. In their position as an in-between age group, very little of concrete value has been concluded on 30 – 39 year-olds in this analysis. In expanding somewhat the combined 1990 and 1992 sample-sets cohort to include all Alberta respondents aged 26 – 39, analysis of these data sets could focus on an age group not targetted as the highest-risk, but, rather, the age group, both financially and occupationally, in the best position to continue the HIV-prevention initiatives and thus, implicitly, lend power to its own perception of the HIV risks, attitudes, behaviours, and related factors. It will be very important to ensure, in the years to come, that such individuals, who are and will be at the helm of health, educational, social and political organizations involved in the fight against AIDS, are well-informed and well aware of the differences between real and perceived risks, even just within their own lifestyles. Data from five or ten years after these data sets can be compared to evaluate the aspired-to

degrees of positive change in this future all-important and influential group.

However, returning to the more limited results of the present study, the conclusion must be that, for whatever as yet unknown reasons, the message in HIV prevention which health officials and the governments had been attempting to send to the Alberta population to that point was not effectuating the results that were intended. Attitudes and HIV-relevant behaviours in 1990 and 1992, both in terms of risk awareness and prevention, show a need for a great deal of change before it is clear that the Alberta population has begun taking the issue and threat of AIDS seriously. Some more specific factors explored in later research and addressed in the ensuing literature possess potential explanatory power for the results of this study and will be briefly considered. Perhaps some of these factors may be considered in future research and even data-gathering on the adult Alberta population.

5.2 Other Factors in Condom Use

Although this analysis did not allow for the examination of the possible reasons for this result, Gartrell (1993) noted that many Alberta respondents, when asked, gave reasons other than sexual activity as their primary subjective risk factors for contracting AIDS. Such reasons include high risk work, a high prevalence of HIV, and medical and dental treatment. Although health and government studies and education have shown this to be false (i.e., sexual activity is, in fact, the leading mode of HIV transmission, and no evidentiary basis exists for fear of transmission by those alternate sources when usual

professional precautions are taken), it is apparent that people are still fairly widely misinformed as to the level of risk associated with engaging in unprotected sexual intercourse. In addition to this, it is also possible that individuals, though informed of the risk factors through educational programs set up by the Alberta and Canadian governments, may not be taking the risks to their own health as seriously as they should be. The fact that HIV is, and continues to spread as, an epidemic whose numerical impact is as yet not really known, is an attest to the misinformation and to the seemingly careless attitudes in the Alberta population, as expressed by the respondents in these two studies.

5.3 Considerations of Factors Outside the Scope of A.A.S.

The results of this study have painted a clearer picture of adult Albertans' sexual behaviour and perceptions of risk in 1990 and 1992, but the limitations of these *A.A.S.* studies leave us with a considerable lack of key information in other areas. The limitations of the data's descriptive power means that a more in-depth probing of reasons and underlying factors operating in influencing the variables presented here is not possible. The type of information gleaned in this analysis could benefit from a comprehensive analysis including both qualitative and quantitative results, bolstering and clarifying results in each area. The tentative speculations on logical relationships expected between risk variables themselves and between risk and condom use may be either confirmed or contradicted by open-ended, qualitatively designed research on Albertans.

For example, since individuals' perceptions of their own risk does not seem to be

very strongly related to condom use, other important factors, in addition to those suggested above, could be more easily discovered through analyzing individuals' descriptions of the mental processes involved in a variety of different sexual relationship circumstances they encounter. Further, then, this type of approach could narrow down the variables through specific interview techniques. In exploring these other factors, there appear to be two levels of inquiry at which the identification of factors can be addressed. What factors affect people's perception of their own level of risk of contracting the Human Immunodeficiency Virus, and what factors are instrumental in leading to change in actual, preventative behaviours such as condom use?

Several factors have been studied with respect to these two levels of inquiry and assessed by a variety of researchers both in Canada and internationally. These include, among others, analysis of the effects of HIV/AIDS knowledge, testing and counselling, fear of contracting HIV, self-efficacy, risk-taking habits and patterns of behaviour, partner communication skills, and the relevant social environment and lifestyle context. Fear of contracting HIV and risk-taking habits and patterns seem to be relevant at the first level, whereas the other factors may have more impact at the second level of inquiry.

5.3.1 Knowledge about HIV/AIDS

The 1990 and 1992 *All Alberta Surveys* each asked two knowledge questions on HIV/AIDS. This was presumably based on the assumption that, to know and understand what HIV is, to know how it is transmitted, to appreciate the seriousness of its consequences, and to be informed on available ways of preventing oneself from contracting it, is to make conscious and safety-affirming behaviour choices to severely reduce one's risk. For the general population this would involve either complete abstinence from sexual activities; monogamy with a prior HIV-tested sexual partner, as well as the trust in the partner's continued monogamy; or, finally, consistent and unconditional proper condom use with all sexual partners (listed in ascending order of the risk of contracting the HIV).

Ajzen and Fishbein's Rational Action Model (in Maticka-Tyndale, Feb. 1991) demonstrates the above logic in which behaviour follows from an awareness of what would reasonably be in one's best interest, an intention to behave in that way, and then actual enactment of the behaviour. However, the presence of knowledge and an intention to protect one's health has been shown not to directly affect the actual preventative behaviours. This is also what the results of the present *A.A.S.* 1990 and 1992 analysis show. In fact, Maticka-Tyndale (Feb. 1991) suggests that, "knowledge most probably has an *indirect* effect, acting as a cue (p. 47, emphasis added)". So, while knowledge exists at a fairly high level among Albertans and Canadians, the means for creating awareness of the relevance of consequences (effectuating an intention to practice safety measures) and

putting into effect the necessary behaviours for prevention (e.g., actual condom use) have not yet been sufficiently identified and/or are not yet readily employed by the population. The absence of HIV-preventive behaviour may also be affected by the factor, or absence, of *early* intervention with information and practical knowledge, before alternate behaviours develop.

5.3.2 HIV/AIDS Testing/Counselling

A second consideration for researchers is the extent to which the act of going for an HIV test, accompanied by varying degrees and qualities of pre- and post-test counselling, can influence preventative behaviours. This type of question was asked in only one of the surveys (1992) analyzed in this paper. It is evident from certain studies on counselling practices (see below) that, when counselling actually is offered, particularly considering the manner in which it is offered, it is not of an adequately in-depth nature to provide much help or motivation to a majority of individuals. This consideration exists, further, in light of the large extent to which counselling is not provided at all under HIV testing circumstances. Wolitski et al. (1997) suggest that the results from many counselling studies in this area are at best mixed, with successes being documented only for specific settings and/or populations. This is noted, however, while still acknowledging the distinct ability for behaviour change motivation in some individuals (see Landis et al., 1992). Particularly the use of interview techniques, leading to service encounter counselling, allows a focus on the individual's needs and interests which may improve the quality of HIV counselling as well as provide specific skills application (Silverman et al., 1992).

Thus, it may well be that HIV counselling is an important factor to be considered for future changes if, in fact, two things occur. Initially, the counselling must become more patient-specific and patient-involved. Further, according to Gartrell (1993), Alberta testing rates were very low in 1990 and 1992, at 10% and 14% of the population, respectively. These rates were even lower than the U.S. rates, which were generally only about 1/4 of the population. Thus, since a very low proportion of the population actually attend HIV testing and counselling, there must also be an increase in the numbers of people at risk going and being exposed to the counselling.

5.3.3 Fear as an Influencing Factor

The extreme seriousness of the consequences of contracting HIV made the role of fear of HIV and AIDS a prime factor studied in much earlier research, but the findings seem to point towards a need to include other elements in combination with fear (self-efficacy and internalization of risk) for fear to be relevant as a predictor for condom use. At the most, recalling the research findings of curvilinearity between fear of AIDS and condom use, namely, that high and low levels of fear are actually associated with low condom use during vaginal intercourse (Wells, 1994), it may be difficult to translate fear factor influences into concrete behavioural change in any case (for example, achieving levels of "moderate" fear) since fear levels are individualized and personal, and hence, not controllable.

In summary, fear can be considered a potential motivator in relation to condom

use when linked to a perception of personal vulnerability to HIV. Unfortunately, with the existence of high levels of "perceived personal immunity" (Hansen et al., 1990), any actual influence of fear may be negated, because people tend to deny or significantly under-estimate their own risk.

5.3.4 Risk-Taking Behaviour

In light of the considerable riskiness of unprotected sexual intercourse in a social environment of fairly lenient moral standards and modal patterns of multiple sexual partners for most individuals, it is important to examine other risk-taking behaviours, as well. Much like unprotected casual sex, other risky behaviours tend to occur much more frequently among younger people, particularly among those 16 - 29 years old. Sensation-seeking of many kinds, whether illegal or simply daring and risky, is correlated with and predictive of more risky sexual behaviours and unprotected sex. Mere knowledge has not sufficiently reduced the incidence of risky sexual behaviour, and researchers suggest a more targetted approach which takes into account the characteristics of individual populations (Fisher & Fisher, 1992) and includes knowledge, motivation factors, and resulting behaviours of given groups.

This type of analysis must include considerations of the individuals' social environment, in both the family and peer contexts. These contexts will inform researchers on the norms and supports existing for various sex-related behaviours within the communities, which act as either health-promoting or obstacle-forming, depending on the initiative of role models. This type of approach can provide invaluable information for

structuring meaningful and successful health programs and educational prevention tactics. The stigmatization of AIDS as a "gay disease" and the normative attitude towards condom use as sexually non-pleasurable and, among younger groups, as "uncool" behaviour, are examples of such obstacles present in the early stages of HIV/AIDS prevention efforts. These types of factors, however, can be better assessed in detailed fashion through environmentally- and context-specific research, including, for example, explorations of a qualitative nature.

5.3.5 Self-Efficacy and Skills Intervention

Given the environmental influences necessarily affecting individuals daily, individuals' perceived self-efficacy has become a major focus in identifying concrete factors to promote condom use and general HIV-protective behaviours. Programs which seek to educate and actively guide individuals to lower their risk of HIV infection emphasize the need for "people's beliefs that they can exert control over their motivation and behavior and over their environment (Bandura, 1990, p. 9)". This is a rather important psychological element not measurable through degrees of knowledge, awareness of risk levels, or intention to change behaviour. These other tools of knowledge and education, awareness of severity of the consequences, acknowledgment of one's own risk, and access to practical solutions to reducing risk are not sufficient on their own in producing behaviour changes if the individual is not capable (or believes herself to be incapable) of putting those together into a comprehensive lifestyle plan. This appears to be an extremely important area for health educators and campaigns to focus on.

In fact, many of the "counter-norm" lifestyle behaviours do not occur in isolation, but are present in clusters of high-risk activities and represent a very different perspective on prioritizing health, life, pleasure, and immediate need fulfillment. An example in point is well illustrated by Tremble (1993), who interviewed homosexual-identified male youth prostitutes living on the street. He found that, among this extremely high-risk population, "[s]adly, AIDS is a low level concern for them" (p. 43). Living from day to day leads to an inability to plan for the future, and these boys (generally age 13 to 19) do not have the luxury of being concerned with their long-term health, a rational thought process taken for granted in many studies aimed at young populations. Very different life experiences, perspectives and priorities combine with the immunity belief factors which typically operate for many youth to place this population and their sex "customers" in a particularly precarious position not envisioned by many AIDS prevention programs.

Both the prevalence of very high levels of unprotected sex and the presence of extensive IDU needle-sharing on the street permit the opportunistic HIV to spread many times more quickly among street-living boy prostitutes than among most other populations. However, the perceived lower-risk general population is not immune to the effect of this wave. Tremble (1993) reminds the reader that many of these sex customers are married and pass on this high risk factor to unsuspecting partners at home (p. 43), who may then even pass this onto children in utero. Once again, the "other person syndrome" is demonstrated as an area of vulnerability for those with perceived low risk.

HIV prevention efforts must increase focus in the area of encouraging self-efficacy also, because, the greater the peer pressure (whether by teen peers or by an adult's community or professional standards), the greater the need for the confidence to resist the pressures and control risk-taking behaviours, such as integrating into one's lifestyle the habit of consistent condom use. Self-efficacy is in large part a matter of practice and specific skills training (for example, programs which teach youth how to buy and use condoms, gaining confidence with each venture), combined with effective role-modelling and social/sexual management skills (such as practicing the social and sexual interaction scenarios between partners). Even sexuality and health education in the classroom demonstrate the necessity of, not only pure knowledge (which is generally very high in the Canadian population), but of the development of relationship communication skills in practice.

Once again, this skills development demands greater client-specificity in HIV counselling and testing availability, as well as the matching of solutions, campaigns and workshops in intervention to account for other specific obstacles to HIV prevention encountered by each of these populations. Albertan and Canadian youth are at very high risk, whether they acknowledge this risk or not, as evidenced by the significant drop in the median age of HIV infection in Canada. Whereas the median age of HIV-infected individuals in the Canadian population was 32 years in 1990, the population at the median of those struck by infection by 1995 was only 23 years old (Hawa, Munro &

Doherty-Poirier).

At this point, the Alberta-directed literature and strategies do not indicate any implementation of a minimum provincial standard for skills and confidence training in schools, something to be desired for the future to unite provincial efforts on HIV prevention. In general, however, the earlier that practical life skills programs such as those mentioned above can be made available to children and youth in schools, clinics, teen centres, and group homes, the more likely this practical training is to reach the (present and potential) high-risk populations.

5.4 Ideas for Future Prevention Education and Programming

From the discussion above, it seems evident that all of the above factors in HIV prevention are important, to a greater or lesser degree, depending on the population characteristics they are operating on. This continues to be true generally, throughout further *A.A.S.* research on AIDS after 1992[18]. The risk levels and sexual behaviours of the adult Alberta population can also be evaluated according to these same factors, as identified in other studies, since the statistics and associations indicate some similar problems in risk reduction and similar age- and gender-relevant risk levels.

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[18] See Northcott, 1993; Northcott, 1995; Northcott, *The 1995 Survey of Adults, 1996*; Northcott, *The 1996 Survey of*
Footnote continued next page...

Health prevention efforts in Alberta require close examination of the following program types already in place. HIV/AIDS testing and counselling should become more patient-directed and patient involved, resulting in a pre- and post-test information session which works according to the patient's needs. Education programs and courses must refocus away from pure knowledge delivery, which almost all research shows to have been extremely successful in increasing the level of HIV/AIDS knowledge, and more towards a skill-based, practical type of education. When added to the existing high levels of knowledge, this focus can increase both the confidence in condom use skills and the perceived self-efficacy of individuals in negotiating social and sexual situations.

This practical, skill-based approach needs to be geared increasingly towards, specifically, education in schools and in youth-attended centres, group homes, and among health and social service providers. HIV/AIDS education success in Alberta schools, measured in terms of students' increased tolerant attitudes and higher levels of knowledge, has been partly accomplished through teacher inservice training on HIV/AIDS (Doherty-Poirier, Munro & Salmon, 1994). However, as the authors have noted in their research, the fact that fully 1/6 of all teachers (including 18% of urban grade 11 teachers) did not receive the openly available training tells us that there is still significant room for improvement in motivating school administrations and the teachers themselves to support these efforts.

Adults, 1996; Northcott, 1998.

Of ongoing importance is the continual promotion of AIDS-related health concerns and issues via public media, with an effort to command attention with respect to the seriousness of HIV/AIDS without creating too much HIV-associated fear (a factor which actually reduces condom use). The strategies should include considerations of speaker characteristics to encourage target population identification with the message and its transmitter, so as to reduce levels of "other person syndrome".

On a more interactive level of application, active encouragement of parent-child and partner communication skills increases individuals' protective behaviours, most generally through openness and honesty around sexuality, all of which can be taught and promoted from a very young age on. Maticka-Tyndale (1995) laments as a key weakness the absence of sexuality research in prevention models encouraging condom use and of the inclusion of valuable insights on sexuality and its imbeddedness in the ongoing HIV/AIDS prevention discourse.

In her assessment of functional and operative models and theories of HIV prevention, Maticka-Tyndale observes that, nonetheless, the AIDS epidemic will not be slowed, in large part, because "there is neither the political nor the social will necessary to take these models to scale" (1995, p. 97). In an inter-related way, the "social will" she speaks of involves the need for development of younger people's habits of perceived ability to discuss risk reduction methods. These habits will most often develop into

lifestyles of responsible behaviour control and socially and sexually compatible condom use both in the present and in subsequent adulthood (Shoop & Davidson, 1994).

Most importantly, an increased number of studies on the Alberta population and its special characteristics would be most beneficial in understanding and prioritizing factors to address and focus on in local health awareness and prevention efforts. The *All Alberta Survey* results on HIV/AIDS have provided a good foundation for this future research, but they should be seen as only a stepping stone for a great deal of important research in Alberta on this topic. Further efforts are exemplified in more recent community health promotion reports released by AIDS Vancouver (eg., *More Reflections On Taking Care of Each Other*, 1994, and *Knowledge from Action: Community-based Research in Canada's HIV Strategy*, 1998) and Alberta Health's sponsorship of continued research in specified risk areas (eg., *HIV Prevention and Injection Drug Use* project research, 1997), as well as general HIV/AIDS health promotion forming part of ongoing goals of provincial and national health strategies. The most recent Alberta Health strategy report details further efforts planned into the year 2002, in *HIV In Alberta: 1998/99 - 2002* (March, 1999).

Further, as discussed above, perceived personal immunity to the HIV plays a dangerous role as a relevant factor in the spread of HIV in Canada. A significant number of individuals who are at risk for contracting HIV believe that they are safe, whether through thinking they know their sexual partner, believing they fit into a stereotypically

low-risk category, or simply not identifying themselves as potentially vulnerable to the known risks they think apply to others. This false sense of security actually serves to increase their risk, since they typically take fewer precautions than those at low risk. Thus, more recent campaigns aimed at this type of thinking have attempted to hit home how false and dangerous this approach can be, by focussing on personalizing the risk of HIV infection among typically "invincible" young people.

Specific shock-value and personalizing initiatives directed at the increasingly large target population of youth and young adults have become more widely used, including the *Young Adult HIV/AIDS Prevention Program* which exposed young Albertans to education in the form of such media as poster communications in 1994 (See, for example, the *Series Report #5* on Strategy 4 on Phase 1, 1996.). This initiative was followed by a series of reports on the various strategies applied, such as public transit ads, assessing responses by the targetted population (young women 18 - 26 years and their male partners), and the development and impact of the poster ads themselves.

Finally, and perhaps most importantly, while the present research results may imply a lack of clear and easy answers and may encourage a knee-jerk reaction which falls back on the need for controlling and "policing" high-risk populations, this is not the message to take from this research. Public health policy can be guided and reformulated by conclusions that, for example, an insufficiently large proportion of the Alberta or Canadian population is preventing the spread of HIV within Canada through the use of

condoms. What this research does *not* provide any support for is, for example, policies which seek to exclude the participation of present or potential Canadian citizens in a full exercise of their rights and freedoms through mandatory testing of specific populations or professions. This type of policy result would serve merely to perpetuate stereotypes of populations and encourage explicit and implicit discrimination against them (for example, see *HIV Testing and Confidentiality*, 1988). It would also feed the existence of "other person syndrome" among the general population, without actually accomplishing positive, deep-seated change where the social, psychological, and economic problems, as they are slowly becoming identified, actually lie. The latter is a much greater project for governments to tackle, bringing with it successes which are, perhaps, less obvious and less radical, but more long-lasting.

Thus, the above-listed campaigns and their results form an important part of Alberta's HIV prevention efforts and should continue to be encouraged and assessed. Past and ongoing quantitative research such as that conducted for Alberta Health by the PRL in the *All Alberta Survey* plays a necessary role, as it continues to form the basis of valuable initiatives and program development like those listed above. It also provides a guide to, and re-examination of, the changing attitudes, perspectives, and behaviours of Albertans, indicating where future strategy needs to focus in persisting in the fight against AIDS through the fight *for* knowledge and good HIV prevention practice.

6 CONCLUSION

This study attempted to identify and evaluate whether adult Albertans are responding properly to the great health risk of AIDS, both in terms of their condom use as preventative behaviour and their chosen levels of risk for contracting HIV. The results of the analysis of adult Albertans' risk levels and condom use in 1990 and 1992 have shown some expected associations, but also some illogical and unanticipated ones. Subjective and objective risk were expected to have an effect on, and association with, the rate of condom use, with possible variations along age and gender lines. Condom use itself was expected to have increased between 1990 and 1992, largely due to heightened awareness and increased dispersement of media and educational information on HIV/AIDS. It was anticipated that younger people would have more new sexual partners (higher objective risk) and an accompanying higher consistent condom use rate. The higher condom use would additionally be expected from them due to their age and the fact that they grew up in the era of AIDS.

Of the adult Albertan population, around half in both survey years were at some risk, according to the *A.A.S.* subjective definition. In assessing their own HIV risk, males' and females' risk rates converged between 1990 and 1992, becoming closer. Both years demonstrated a similar number of people with new sexual partners, less than 1/5 of the sample; however, Albertans in 1992 had distinctly increased their numbers of new partners in 1992, by almost 1/3. As expected, the youngest individuals were at the highest

objective risk, with 2/5 in both years having had new partners. They also had the most new partners of all age groups, but all groups generally showed higher numbers of partners in 1992 than two years earlier. Males were at a higher objective risk than females in 1990, and this span increased significantly in 1992, contrary to the decreasing span between genders in subjective risk. Males' higher risk levels were also demonstrated through a greater proportion having more partners. However, it is clear that, overall, both genders are increasing their numbers of new sexual partners.

Rates of condom use among Albertans are not very encouraging, since nearly one half of the population never used condoms in 1990 and only 1/3 that number use condoms consistently. Fortunately, overall, 1992 brought with it a fairly large decrease in "no" condom use and an increase in consistent use. The younger age groups demonstrate a generally higher condom use frequency, as well as an increase in their condom use by 1992. This produced a reversal of the relative weights in the "always" and "never" categories, so that the former is increased and latter, decreased, by 1992. Males reportedly use condoms more than females, but both increased their individual levels of condom use in two years. Surprisingly, objective risk is not necessarily associated with subjective risk, and, in fact, those at very high risk do not perceive themselves to be so in 1990, and this discordance actually increases two years later. It seems that mainly those at low risk actually significantly increased their condom use.

These results above are tempered by the multiple regression results which

demonstrate the effects of the factors and condom use variables individually when the effects of other variables are not present. Only 1990 shows an association between condom use and being female, as well as between increased age and higher condom use. In both years, being male is clearly associated with having a higher objective risk. Objective risk, however, is related inversely to condom use in 1990 and is only slightly associated positively with condom use in 1992. Subjective risk and condom use, unexpectedly, do not demonstrate a relationship at all in either year, with age proving to be nearly equally as unimportant in its relationship with condom use.

With this information on the Alberta population in hand, it would be difficult not to admit that a great deal of change in both attitudes and perceived personal risk need to occur before the Alberta population can boast a generally high condom use rate and, especially, a consistently high rate among those in the high risk groups. An increased acknowledgment is required of the existence of risk where individuals perhaps least believe, mistakenly, that it can exist, namely in the populations not stereotyped as high-risk sexually or in behaviour. The conclusion on negative attitudes and fear of AIDS by Northcott and Reutter (1989) draws attention to a greater need to educate the public on real solutions and also to address and counteract the stigmatization of people with AIDS. This social construction aspect of the disease may well inform some of the responses found in the *A.A.S.* in terms of *attitudes* as well as knowledge. Fortunately for Albertans, the AIDS epidemic has not yet reached the proportions here that it has in many other parts of the world; however, the key to avoiding that occurrence is in enacting present changes

in behaviours.

Many factors such as HIV/AIDS counselling, skills training and interpersonal relationship management, and opening communication channels on this topic, though not directly addressed in these surveys, are instrumental in creating the social change necessary for individuals to take the AIDS issue seriously for themselves on a personal level, rather than just on a depersonified level, exhibiting the "other person syndrome". The myth of "personal immunity" needs to be continuously attacked by health promotion campaigns and educators alike, expecially among the younger population.

In addition, it is hoped that further data-gathering and analysis on the topic of HIV/AIDS in Alberta will be conducted into the twenty-first century, with a greater focus on methods of successful practice, informed by theory on socially normative behaviour, and applied on an increasingly interdisciplinary level. This can provide relevant factor/variable correlation patterns to community organizations, health and education advisors, and further research on high risk populations, so as to guide the programs in focusing on areas which are of particular relevance to Albertans and Canadians in reducing our risk of contracting the Human Immunodeficiency Virus and, ultimately, the prevalence of AIDS.

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Appendix 1

AIDS Questions on the 1990 Alberta Survey Questionnaire

1. Have you ever personally known anyone with AIDS or the AIDS virus? (yes, no, don't know)

2. Employers should have the right to require an employee to be tested for the AIDS virus.

strongly agree	1
agree	2
disagree	3
stronly disagree	4
undecided (volunteered)	

3. What are your chances of getting the AIDS virus? Do you think they are high, medium, low, none, don't know)

4. Do you expect to have a blood test for infection with the AIDS virus in the next 12 months? (yes, no, never heard of the test, don't know)

5. AIDS has been described as one of the major health problems in the country. A study may be done and blood samples taken to find out just how widespread the problem is.

   a. If you were selected in this national sample of people to have their blood tested with assurances of privacy of test results, would you have the test? (yes, no, don't know)
   b. If you had your blood tested, would you insist on knowing the results? (yes, no, don't know)
   c. Should people's blood be tested for the AIDS virus without their knowledge it was being done? (yes, no, don't know)

6. Please tell me if you think any of the following people should be tested for AIDS, even if they do not give consent?
   - health care workers
   - recipients of blood transfusions
   - blood donors and organ donors (e.g. kidneys)
   - patients entering hospital
   - the military and airline pilots
   - homosexuals (gay men)
   - bisexual men
   - prostitutes (male or female)
   - injection drug users
   - any others? (specify)

7. a. In your estimation, what percentage of people who now have the AIDS virus will eventually get sick with AIDS?
   Would it be ...
   - less than 10%
   - 10 to 49%
   - 50 to 89%
   - 90 to 100%
   - don't know

b. In your estimation, what percentage of people who now have the AIDS virus are actually sick with AIDS?

Would it be ...

less than 10%
10 to 49%
50 to 89%
90 to 100%
don't know

8. Please tell me how much you agree or disagree with these statements:

a. Most AIDS victims deserve what they got (i.e. the AIDS disease).

Strongly Disagree						Strongly Agree	Don't Know
1	2	3	4	5	6	7	8

b. If a child with AIDS were to attend my child's school, I would take my child out of the school.

Strongly Disagree						Strongly Agree	Don't Know
1	2	3	4	5	6	7	8

c. People who get AIDS deserve first class health care.

Strongly Disagree						Strongly Agree	Don't Know
1	2	3	4	5	6	7	8

d. ASK IF "c" is AGREE

Is that the case regardless of what it costs? (yes, no, don't know)

9. I am going to read a list of statements. Please tell me after I finish all of the statement is at least one is true for you.

a. You have used drugs by needle at any time since 1977.
b. You have haemophilia and have received clotting factor concentrates since 1977.
c. You are a man who has had sex with another man at some time since 1977, even one time.
d. You have had sex for money or drugs at any time since 1977.
e. Since 1977, you are or have been the sex partner on any person who would anwer yes to any of the items I've just read.

Were any of the statements I read true for you? (yes to at least one, no to all of them, refused to say)

10. a. In the last two years have you had sex with at least one new partner? (yes, no)

b. How many new partners did you have? (Ask if yes to 10a)

11. Did you use a condom all of the time, most of the time, some of the time, or not at all? (Ask if yes to 10a)

_____

Appendix 2

AIDS Questions on the 1992 Alberta Survey Questionnaire

THE FINAL QUESTIONS ARE ABOUT AIDS

78. Please tell if you think the following statement is definitely true, probably true, probably false, or definitely false: A person can be infected with the **AIDS** virus and not look sick **(REPEAT CATEGORIES)**

definitely true 1
probably true 2
probably false 3
definitely false 4
don't know **(VOLUNTEERED)** 8

79. a. How effective do you think the use of a condom is to prevent getting the **AIDS** virus through having sex? **(READ)**

very effective ..... 1 **(GO TO 80a)**
somewhat effective ..... 2 **(ASK b)**
not at all effective ..... 3 **(ASK b)**
don't know how effective **(VOLUNTEERED)** ..... 8 **(GO TO 80a)**
don't know method **(VOLUNTEERED)** ..... 9 **(GO TO 80a)**

b. Why do you think that (*a condom is somewhat / not at all effective*)?

_____

80. a. What do you think your chances are of getting the **AIDS** virus? Do you think they are: **(READ)**

high 1
medium 2
low, or 3
none 4
don't know **(VOLUNTEERED)** 8

b. Why do you think that? **(PROBE)**

1. _____

2. _____

81. a. Have you ever had a test for infection with the **AIDS** virus?

yes ..... 1 **(ASK b)**
no ..... 2 **(GO TO 87)**
don't know ..... 8 **(GO TO 87)**

b. Why did you have the test for the **AIDS** virus?

for my own information 01
my doctor thought I needed to have it done 02
when I went into a hospital or was having
a surgical procedure 03
as a requirement for life insurance 04
as a requirement for health insurance 05
I was donating blood 06
other **(SPECIFY)** _____ 87

82. a. When you had the **AIDS** test for infection with the **AIDS** virus, did anyone talk to you about the test? **(MOST RECENT TEST)**

yes ..... 1 **(ASK b)**
no ..... 2 **(GO TO 83a)**
don't remember ..... 8 **(GO TO 83a)**

b. Who talked to you about it? **(CIRCLE ALL THAT APPLY)**

	YES	NO
a health professional	1	2
some one from the insurance company	1	2
other **(SPECIFY)**	1	2
don't remember	8	8

c. What specific things did they tell you?

1._____

2._____

83. a. Did you <u>want</u> the results of the test?

yes ..... 1 **(GO TO 84a)**
no ..... 2 **(ASK b)**
don't remember ..... 8 **(GO TO 84a)**

b. Why didn't you (*want the results of the test*)?

84. a. Did you <u>get</u> the results of the test?

yes .....1 **(ASK b)**
no .....2 **(GO TO 86)**
don't remember.....8 **(GO TO 87)**

b. Were the results given in person, by telephone, or in some other way?

in person.....1
by telephone 2
by mail.....3
Other **(SPECIFY)**.....7

85. a. When you received the results of your test,did anyone talk to you about the results?

yes .....1 **(ASK b)**
no .....2 **(GO TO 87)**
don't remember.....8 **(GO TO 87)**

b. Who talked with you about this? **(CIRCLE ALL THAT APPLY)**

	YES	NO
a health professional	1	2
some one from the insurance company	1	2
other **(SPECIFY)** _____	1	2
don't remember	8	8

c. What specific things did they tell you?

1._____

2._____ **(GO TO 87)**

86. Why did you not get the results (*for your AIDS test*)?

1._____

_____

87. [redacted] **ASK ALL** [redacted]

a. Now we are going to ask you some personal questions and we would appreciate your frank and honest response. Please remember your answers will be kept confidential. In the last two years have you had sex with at least one new partner.

yes .....1 **(ASK b)**

no .....2 **(GO TO 92)**

b. In total, how many partners have you had in the last two years?

_____ partners

88. [redacted] **ASK MALES ONLY** [redacted]

(*Were all / was*) your partner (s) female or male, or (*some female and some male*)?

female.....1 **(GO TO 90)**
male.....2 **(GO TO 90)**
some female and some male.....3 **(GO TO 90)**

89. [redacted] **ASK FEMALES ONLY** [redacted]

(Were all/was) your partner(s) male or female, or (some female and some male)?

male.....1 **(GO TO 90)**
female.....2 **(GO TO 91)**
some male and some female.....3 **(ASK 90)**

90. [redacted] **ASK MALES AND FEMALES** [redacted]

a. Did you and your partner(s) always use a condom, never use a condom, or sometimes use a condom?

always.....1(GO TO 91)
never.....2 (ASK b)
sometimes.....3 (ASK b)

b. Why didn't you and your partner(s) use a condom (all of the time) ?

1._____

2._____

91. Now I am going to read a list of statements that might apply to you. Please tell me after I finish with all of the statements, if at least one would be true for you at any time since the early 1980's. (READ SLOWLY)

- You have injected drugs or shot up, including steroids, during that time.
- You took part in anal sex.
- It is likely that any person with whom you had sex, had previously injected drugs, including steroids.

Were any of the statements I read true for you?

yes to at least one 1
no to all of them 2
refused to say 8

Appendix 3

Age Recoded as a Four-Category Variable

18-29 years..... 1

30-39 years..... 2

40-54 years..... 3

55+ years..... 4

Education Recoded as a Four-Category Variable

1-6 ("Less than High School")..... 1

7 ("High School Completed")..... 2

8-9 ("Non-University Incompl./Compl.").... 3

10-15 ("University Incompl./Compl.")..... 4